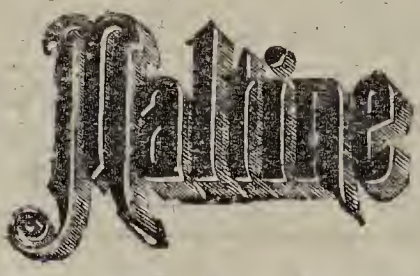


WITH PEPSINE & PANCREATINE

(A COMBINATION OF THREE DIGESTIVE AGENTS).

DIASTASE—Converts starchy matters into glucose and maltose.

Renders farinaceous food easily assimilable.

PEPSINE—Converts proteids into albuminoses and peptones.

Digests meat, egg, gluten.

PANCREATINE—Emulsionises fats.

Prepares for assimilation the farinaceous and nitrogenous as well as the fatty components of food.

"MALTINE" with PEPSINE and PANCREATINE constitutes an efficient combination of digestive agents and digestible nutriment. It supplies the principle requisite for the digestion of each class of food. It also affords in "MALTINE" a food so assimilable that it can be appropriated by the enfeebled organism, which is thus provided with suitable nutriment while being stimulated to the discharge of normal function.

"MALTINE" obtained the ONLY GOLD MEDAL for Malt Extract at the International Health Exhibition, London, 1884.

"The greater nutritive value is apparent."—*Brit. Med. Journ.*

"Contains from three to five times as much Diastase as any other Extract of Malt in the market."—PROF. ATTFIELD.

"'MALTINE' with COD LIVER OIL. Patients unable to tolerate the purest and most carefully prepared Cod Liver Oil can readily digest and assimilate it when combined with 'Maltine.'"—*Brit. Med. Journ.*

Samples Free to Medical Men. In prescribing, please specify "MALTINE CO.'

THE MALTINE MANUFACTURING CO.,

LIMITED,

24 & 25, HART ST., BLOOMSBURY, LONDON.

357.2175

"A perfect combination of Malt Extract with Cod-Liver Oil."—THE BRITISH MEDICAL JOURNAL.

Bynol "The Perfected" MALT and OIL.

This preparation being an intimate combination of ALLEN & HANBURYS' Malt Extract with Cod-Liver Oil of their own manufacture, presents many notable advantages.

It is absolutely *free* from any *unpleasant taste.*

It can therefore be taken by *invalids* having the most *fastidious palates.*

It contains the *oil* in such a *fine state of division* that the particles cannot be seen under the microscope, and will remain in this state for months.

It possesses all the high *diastasic powers* of Malt, and thus materially aids the digestion of amylaceous foods.

It ensures, so far as can be done, the digestion of the cod-liver oil by perfectly emulsifying it.

There is no better method for administering Cod-Liver Oil and assuring its effectual and easy assimilation than by combining it with Extract of Malt. In addition to the properties of Cod-Liver Oil, which are too well known to be enlarged on here, **BYNOL** possesses all the high diastasic powers of Malt in perfection, and thus materially aids the digestion of all foods containing starchy or farinaceous matters. **BYNOL** is thus a combination of valuable food-stuffs which actively assist digestion, and is of the greatest value in Consumption, Wasting Diseases, Anæmia, Dyspepsia, and general weakness in convalescence from severe illnesses. It is unrivalled for children, who will regard it as a sweetmeat rather than as a medicine. During the winter **BYNOL** will be found of especial service in warding off the liability to *colds and coughs*, and it can be taken without the slightest repugnance during the summer months even by the most fastidious.

OPINIONS OF THE MEDICAL PRESS.

THE LANCET writes:—"Globules of oil cannot be distinguished. The Malt Extract is well prepared, and the diastase active. The flavour is very satisfactory."

THE HOSPITAL GAZETTE writes:—"It is far in advance of any emulsions of this drug." (*i.e.*, Cod-Liver Oil.)

THE MEDICAL PRESS AND CIRCULAR writes:—"A perfect combination of the Malt Extract and Cod-Liver Oil prepared by this Firm."

Put up in Jars, 2s. and 3s. 6d, To the Medical Profession, 18s. and 32s. per doz.

SAMPLES FREE TO MEDICAL MEN ON APPLICATION.

☞ The late Sir ANDREW CLARK, P.R.C.P., lecturing at the London Hospital on "The Treatment of Fibroid Lung Disease," said:—"There are two remedies which sometimes do succeed where the ordinary diet will not succeed in nourishing the patient, one is Cod Liver Oil and Malt given with food, a preparation called BYNOL prepared by Messrs. Allen and Hanburys.

See also Pages ii, iii, 429, and 443.

☞ It is not infrequently necessary for children to be taken from the breast owing to insufficient supply or poor quality of the mother's milk and to be fed entirely or in part by bottle. In such cases it is of the greatest importance that the food supplied should be easy of digestion and not likely to cause gastric or intestinal troubles, which are so liable in children to end fatally. While there exist many foods of more or less value for the use of children of more than seven or eight months of age, *hitherto there has been no food which could safely be given to infants from birth up to the age mentioned.* As a rule, cow's milk, more or less sterilised and diluted with water, barley water or lime water, and sweetened, has been given, but through ignorance or carelessness of nurse or mother the baby often fails to thrive, and though it may pull through and live, its constitution is permanently weakened. Influenced by these and other considerations ALLEN & HANBURYS have instituted a series of experiments under the advice and direction of physicians specially skilled in the ailments of children, and are now able to offer to the profession certain foods adapted on sound physiological principles for rearing infants from birth up to six or eight months of age, after which time ALLEN & HANBURYS' well-known "MALTED FOOD" answers admirably.

"First Food for Infants"

Is specially adapted for *delicate* Infants from birth up to three months of age, and is prepared from fresh and carefully selected cow's milk. The approximate composition of this milk having been determined, it is brought up as nearly as possible to the standard of human milk in casein, fat (cream) and sugar. It is then sterilised, concentrated *in vacuo* and preserved in hermetically closed vessels. It contains no starch, and does not clot in large curds as ordinary cow's milk does.

In Tins at 1/9 and 3/6 each; 18/- and 36/- per doz. to the profession.

"Mother's Milk Food"

Is designed for Infants under seven months. It consists of No. 1 Food with the addition of small quantities of Maltose and Dextrine, together with soluble Phosphates resulting from the mashing crushed whole meal with barley malt. Thus a slight stimulus is supplied to the digestive powers, and as there is no unconverted starch present the whole of the Food can be well digested. It is sterilised, concentrated, and preserved as in the case of No. 1 Food. This food will be found to answer perfectly for all ordinarily healthy children from birth onwards, as all the ingredients can be readily digested. It is only in the case of very *weakly or delicate children that No. 1 Food need be given.*

In Tins at 1s. 9d. and 3s. 6d. each; 18s. and 36s. per doz. to the profession.

N.B.—Both the above Foods are complete in themselves, containing the Milk needed, only requiring the addition of hot water; this is an important point to be borne in mind when considering the cost. Further important points are (1) *that the Food is completely* sterilised, *and* (2) *that its* composition *is* uniform. *These foods are now prepared in the form of a powder instead of paste as formerly.*

"Malted Food"

Is designed for Children of seven months old and upwards as well as for Invalids, and is the Food made by Allen & Hanburys for many years. Its basis is fine Wheaten Flour, specially rich in nitrogenous matter, and this is subjected to careful heating and to the action of such an amount of Malt Extract as shall ensure the conversion of a large proportion of the starch. The remarkable nutritive power of this Food is due to the relative proportions of converted and non-converted amylaceous constituents. Prepared with fresh milk it affords a most valuable Food, rich in all the elements required for the nutrition of the growing tissues of the body and perfectly easy of assimilation.

In Tins at 6d., 1s., 2s., 5s., and 10s. each; 4s. 10d., 9s. 6d., 19s., 46s. and 90s. per doz. to the profession.

Allen & Hanburys, Ltd., London.

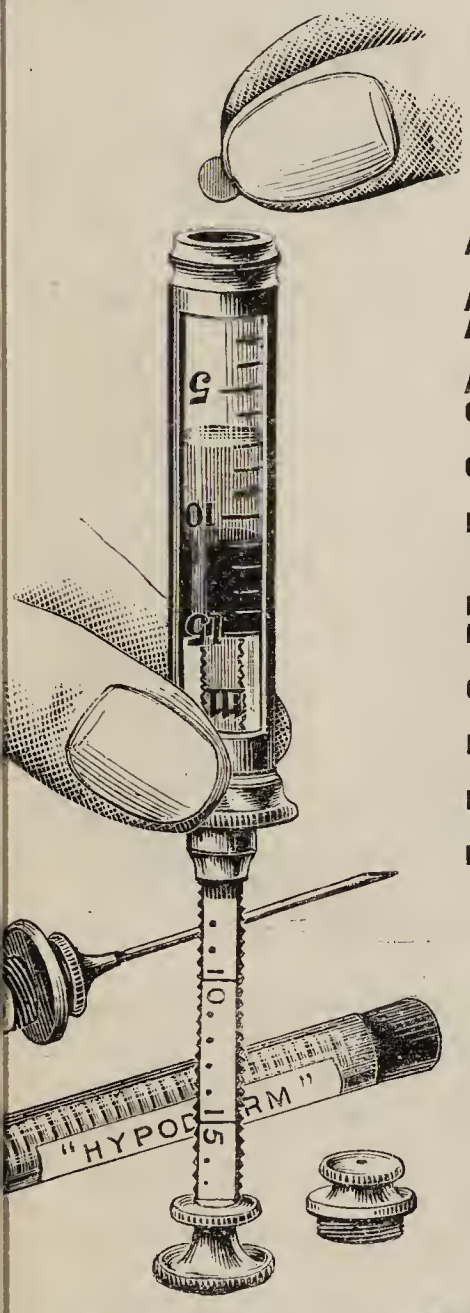
Offices, Laboratories & Warehouse—BETHNAL GREEN, E. *City House*—PLOUGH COURT, LOMBARD ST., E.C. *West End House*—VERE ST., W. *Cod Liver Oil Factories*—LONGVA AND KJERSTAD, NORWAY. *Depôt for* AUSTRALIA—484, COLLINS ST., MELBOURNE.

See also pages i, iii, 429, and 443.

"Hypoderms"

Compressed Tabellæ of drugs for HYPODERMIC MEDICATION.

For convenience in administering a great variety of drugs by hypodermic injection our HYPODERMS will be found unsurpassed, and have within the last few months been still further greatly improved. They dissolve in water almost *instantaneously*, *no trituration* or *heat* being required. The dose is exactly known. The drug is in its purest form. Provided that the Syringe and Needle are kept quite clean, and that distilled water is used, no subcutaneous irritation or inflammation can follow their use. The active properties of the drug are unimpaired for any length of time.



The *Lancet* writes: "The following advantages claimed for the 'Hypoderms' are found to be perfectly true—they dissolve easily and rapidly in a minimum of water without the aid of heat or trituration, yielding at once, if preferred, in the syringe itself a uniform solution of the drug; whilst, of still greater import, they contain, according to analysis, the exact amount of active ingredient they are stated to contain." (See rest of article for exact analysis of Hypoderms, June 6th, 1891).

A FEW OF THE MORE IMPORTANT ARE:—

Acidum Sclerotinicum gr. $\frac{1}{2}$.
Aconitina gr. $\frac{1}{200}$.
Apomorphinæ Hydrochloras gr. $\frac{1}{20}$.
Atropinæ Sulphas gr. $\frac{1}{60}$, $\frac{1}{100}$
Caffeinæ Sodio-Salicylas gr. $\frac{1}{2}$.
Cocainæ Hydrochloras gr. $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$.
Digitalinum gr. $\frac{1}{100}$.
Digitalinum gr. $\frac{1}{100}$.
Morphinæ Sulphas gr. $\frac{1}{8}$.
Ergotininia gr. $\frac{1}{200}$, $\frac{1}{100}$.
Eserinæ Salicylas *vide* **Physostigmina.**
Gelseminæ Hydrochloras gr. $\frac{1}{50}$.
Homatropinæ Hydrobromas gr. $\frac{1}{200}$.
Hyoscinæ Hydrobromas gr. $\frac{1}{200}$, $\frac{1}{100}$.
Hyoscyaminæ Sulphas gr. $\frac{1}{50}$.
Hydrargyri Perchloridum gr. $\frac{1}{20}$.
Morphinæ Sulphas gr. $\frac{1}{8}$, $\frac{1}{6}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$.
Morphinæ Sulphas gr. $\frac{1}{8}$.
Atropinæ Sulphas gr. $\frac{1}{200}$.
Morphinæ Sulphas gr. $\frac{1}{6}$.
Atropinæ Sulphas gr. $\frac{1}{180}$.
Morphinæ Sulphas gr. $\frac{1}{4}$.
Atropinæ Sulphas gr. $\frac{1}{140}$.
Morphinæ Sulphas gr. $\frac{1}{3}$.
Atropinæ Sulphas gr. $\frac{1}{120}$.
Morphinæ Tartras gr. $\frac{1}{8}$, $\frac{1}{4}$.
Physostigminæ Salicylas gr. $\frac{1}{100}$.
Picrotoxinum gr. $\frac{1}{100}$.
Pilocarpinæ Hydrochloras gr. $\frac{1}{10}$, $\frac{1}{2}$.
Quininæ Hydrobromas gr. $\frac{1}{2}$.
Sparteinæ Sulphas gr. $\frac{1}{2}$.
Strychninæ Sulphas gr. $\frac{1}{100}$, $\frac{1}{60}$.

Full list on application.

Other strengths and formulæ are frequently added and can be made to order. Put up in small tubes at 10s. per doz.

The Hypoderms may be dissolved in the syringe itself, thereby ensuring absolute accuracy of dose and saving of time to the practitioner.

Hypodermic Syringes and Cases in great variety. Any special form not in stock made to order. Fittings altered to suit individual taste. Illustrated Price List on application.

Physicians desiring to prescribe Hypodermic Tabellæ as manufactured by Allen & Hanburys, are requested to use their term "Hypoderm" and to add the initials "A. & H."

Samples of Hypoderms sent post free to medical men on application.

Allen & Hanburys, Ltd., London.

Offices, Laboratories and Warehouse—Bethnal Green, E. *City House*—Plough Court, Lombard St., E.C.
West End House—Vere St., W. *Cod Liver Oil Factories*—Longva and Kjerstad, Norway.
Depôt for AUSTRALIA—484, Collins St., Melbourne.

See also Pages i, ii, 429, and 443.

UNIVERSAL DRESSING TRAY

(REGISTERED),

SUGGESTED BY W. T. WHITMORE, F.R.C.S.

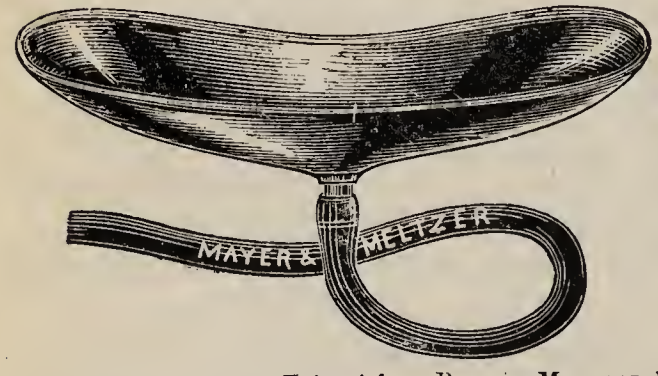
Useful for washing out abscess cavities and for the syringing and dressing of wounds in any part of the body.

—

Price of Tray, 7/6.

Price of Douche, 5/-.

Registered No. 221267.



Extract from BRITISH MEDICAL JOURNAL, *March 24th*, 1894.

"The old-fashioned pus-basin was a clumsy appliance. In washing out a sinus or emptying a cavity there was always a great risk that in removing the basin from the body of the patient some part of the fluid would be spilt into the bed or on to the floor. The basin shown in the accompanying diagram should render it easy to douche a wound for as long as may be necessary, and with as large a quantity of fluid as may be desired. The indiarubber tube attached to the central aperture is carried into a basin placed on the floor, and the fluid runs away at once into this, and does not accumulate in the pus-basin held in contact with the patient, and liable, therefore, to be tilted by any sudden movement. It can be held in place by the patient himself."

Extract from THE HOSPITAL, *April 21st*, 1894.

"There can be no question that this will be the dressing tray of the future."

SOLE MANUFACTURERS:—

MAYER & MELTZER, 71, Great Portland St., LONDON, W.

(Branches—Melbourne and Cape Town),

Surgical Instrument Makers to the University College Hospital, Hospital for Women, Hospital for Diseases of the Throat, the principal Provincial Hospitals and to the Crown Agents for the Colonies.

Attention is specially called to

INGLUVIN.

COMPRESSED INTO 5 GRAIN-LENTIFORMS,
OR IN POWDER.

A Powder prescribed in the same manner, doses, and combinations as Pepsin.

INGLUVIN has answered admirably in several cases of obstinate vomiting in pregnancy which have occurred in my practice, when all other drugs have failed.

(Signed) RICHARD PARAMORE, M.R.C.S., Eng.

HUNTER STREET, W.C., May 1, 1880.

I had a case of persistent vomiting two years ago (in the case of a young lady) which resisted all the usual remedies. At length I tried INGLUVIN, which proved eminently successful, not merely temporarily, but permanently.

LLANDUDNO, N. WALES, May 12, 1881. JAMES NICOL, M.D.

I have used the INGLUVIN prepared by W. R. Warner & Co., both at the hospital and in private practice, for the various forms of Dyspepsia, and *it has proved highly satisfactory on every occasion.*

(Signed) REGINALD LOUIS VERLEY, F.R.C.P., Physician to the Hospital for Diseases of the Heart and Paralysis, 30, Soho Square, W.

GOWER HOUSE, GOWER STREET, W.C., June 1, 1880.

Prepared only by WM. R. WARNER & CO., Manufacturing Chemists.

Per oz. 4s. Sample free on request.

SOLE DEPÔT FOR THE UNITED KINGDOM—

F. NEWBERY & SONS, 1 & 3, King Edward Street, LONDON, E.C.

(ESTABLISHED A.D. 1746.)

UNIVERSITY OF EDINBURGH.

FACULTY OF MEDICINE.—WINTER SESSION.

The Winter Session commences in October.

Materia Medica .. Prof. T. R. Fraser, M.D.
Chemistry .. .. .. Prof. Crum Brown.
Surgery .. .. Prof. Chiene, M.D.
Institutes of Medicine or Physiology—
Prof. Rutherford, M.D.
Midwifery and Diseases of Women and Children .. .. Prof. Simpson, M.D.
Clinical Surgery (Mon. and Th.)—
Prof. Annandale.
Practice of Physic—Prof. G. Stewart, M.D.
Clinical Medicine (Tu. and Fr.)—
Profs. Grainger Stewart, Fraser, and Greenfield; and Prof. Simpson on Diseases of Women.
Anatomy .. Prof. Sir William Turner, M.B.
General Pathology .. Prof. Greenfield, M.D.
Botany .. .. Prof. Balfour, M.D.
Natural History .. .. Prof. Ewart, M.D.
Medical Jurisprudence—
Prof. Sir Douglas Maclagan, M.D.

LECTURERS.—Clinical Instruction on Diseases of Children, James Carmichael, M.D., and John Playfair, M.D.

SUMMER SESSION.

From the beginning of May.

Botany, Prof. Balfour. Medical Jurisprudence, Prof. Sir Douglas Maclagan. Clinical Medicine, by Profs. Grainger Stewart, Fraser, and Greenfield; and Prof. Simpson on Diseases of Women. Clinical Surgery, Prof. Annandale. Chemistry (Advanced Class), Prof. Crum Brown. Natural History, Prof. Ewart. Physics, Prof. Tait.

LECTURERS.—Mental Diseases, T. S. Clouston, M.D.; Diseases of the Eye, D. Argyll Robertson, M.D.; Clinical Instruction on Diseases of Children, James Carmichael, M.D., and John Playfair, M.D.

The annual value of the Fellowships, Scholarships, Bursaries, and Prizes in the Faculty of Medicine amounts to £3,750; that of other Fellowships, Bursaries, and Prizes, tenable by Students of Medicine, amounts to £1,250. Total annual value, about £5,000.

Practical Instruction is given in Laboratories, with all the necessary appliances, and in Tutorial and Practical Classes connected with the above Chairs, and superintended by the Professors.

A copy of the Regulations for Graduation in Medicine and Surgery may be had on application to the Clerk of the University, or to the Dean of the Faculty of Medicine.

UNIVERSITY OF EDINBURGH, *Feb.*, 1891. JOHN KIRKPATRICK,
Secretary of Senatus.

ARNOLD & SONS' SPECIALITIES.

Aseptic Operation Tables, dressing wagons, sponge tables, instrument tables, sterilizers, and cabinets, as made for St. Bartholomew's Hospital.

New Vaginal and Rectal Speculum (Patented), by Dr. Duke. Vide *British Medical Journal*, March 11th, 1893. Price—Vaginal, 30s.; Rectal, 21s.

New Intra Uterine Applicator, by H. E. Trestrail, M.R.C.S., &c. Vide *The Lancet*, November 28th, 1891. Price complete in leather case, 21s.

New Phymosis Dilator, by T. F. Gardner. Vide *British Medical Journal*, Sept. 26th, 1891. Price 16s. Nickel plated, 17s. 6d.

New Injector Bougie, for Gleet, &c., by James McMunn. Vide *The Lancet*, August 22nd, 1891. Price, in silver, complete, 10s. 6d.

New Bullet Extractor (Patented), by Surgeon-Major Macnamara. Vide *British Medical Journal*, April 1st, 1893. Price, 10s. 6d.

New Nasal Polypi Forceps, by Dr. Ward Cousins. Vide *British Medical Journal*, November 21st, 1891. Price 9s. 6d.

Immediate Perineorraphy Case, by J. B. Hellier, M.D. Vide *The Lancet*, Jan. 23rd, 1892. Price, complete in leather case, 21s.

New Nasal Ointment Introducer, by W. Gayton, M.R.C.S., &c. Vide *The Lancet*, March 12th, 1892. Price complete, 6s. 6d.

Instrument for the Electrolysis of Nævi, by H. Lewis Jones, M.D. Vide *British Medical Journal*, Feb. 20th, 1892. Price 21s.

Nasal Scissors, by W. J. Walsham, F.R.C.S. Vide *The Lancet*, February 13th, 1892. Price 21s.

New Stricture Dilator, by Lieut.-Colonel E. Lawrie, Hyderabad. Vide *The Lancet*, April 9th, 1892. Price £3 3s., or complete in case, £3 10s.

Acupressure Pin, with Cannula, by W. J. Branch, M.D. Vide *British Medical Journal*, September 19th, 1891. Price complete, with silver cannula, 6s. 6d.

New Uterine Dilator, by T. F. Gardner. Vide *The Lancet*, January 23rd, 1892. Price 21s.; nickel plated, 22s. 6d.

Urethro-Dynamometer, by James McMunn. Vide *The Lancet*, October 10th, 1891. Price £5 5s.

New Aseptic Syringe (Patented), 4 oz. price 8s. 6d.; 8 oz., price 16s.

New Aseptic Ligature Bottle (Patented), composed entirely of glass. Price complete 8s. 6d.

New Uterine Dilator, by C. Yelverton Pearson, M.D., &c. Vide *The Lancet*, December 17th, 1892. Price complete, 21s.; nickel plated, 22s. 6d.

Improved Tonsil Guillotine, by A. Morison, M.D., &c. Vide *British Medical Journal*, January 16th, 1892. Price 25s.

New Hypodermic Syringe, as made for St. Bartholomew's Hospital, with patent oil reservoir and gold needles. Complete in Morocco-leather case, 21s.

Saline Transfusion Apparatus, by W. Arbuthnot Lane, M.S. Complete in wood case, 10s. 6d.

Aseptic Operation Knives (Patented), with hollow metal handles, nickel plated. (Handle and blade all one piece).

"Reliance" Clinical Thermometers, with Indestructible Indices. Price, from 3s.

ARNOLD & SON,

Instrument Manufacturers by Appointment to Her Majesty's Government, the Honourable Council of India, the Admiralty, The Crown Agents for the Colonies, Her Majesty's Prisons, Foreign Governments, Royal Chelsea Hospital, St. Bartholomew's Hospital, and the Principal Provincial and Colonial Hospitals, &c., &c.,

31, WEST SMITHFIELD, and 1, 2 & 3, GILTSPUR STREET,

LONDON, E.C.

[ESTABLISHED 1819.]

THE

KEPLER MALT ESSENCE.

In Dietetics for the invalid the KEPLER ESSENCE OF MALT has already won its way to an enviable position, and has distinctly shown its superiority over all so-called nourishing stouts and ales as a food beverage.

Its superior diastasic property, its palatable character, and its freedom from intoxicating qualities raise it at once far above the ordinary level of the very best and most carefully prepared fermented malt liquors.

We are assured by competent judges who have tried it in their clinics that **two fluid ounces of the Kepler Malt Essence are equal in therapeutic value to a pint of the best stout or ale.** This is a most important fact, to be kept well in mind when recommending or prescribing suitable diet for the dyspeptic, the ill nourished, the sick, or the convalescent.

The KEPLER EXTRACT OF MALT makes a pleasant beverage when mixed with Aerated Water and Milk.

Supplied to the Medical Profession in champagne pints and quarts, at 1/2 and 2/- each.

BURROUGHS, WELLCOME & Co.,

SNOW HILL BUILDINGS, LONDON, E.C.,

ALSO AT

PARIS, MELBOURNE, NEW YORK, and BRUSSELS.

Telegraphic Address—"BURCOME, LONDON."

RECENT ADVANCES IN PHARMACY

(BURROUGHS, WELLCOME & CO.).

OPHTHALMIC CASE.

This case measures $2\frac{3}{4} \times 1\frac{3}{4} \times 1\frac{1}{8}$ inches, and contains a medicine dropper, Tabloid-holder, two camel-hair brushes, a small glass mortar and pestle, and nine tubes of Ophthalmic "Tabloids." Nothing so complete, practical, compact, and portable has hitherto been placed at the disposal of the medical profession in this direction. To practitioners in rural districts and other places remote from the chemist, the Ophthalmic Case must necessarily become a *vade mecum*, since, while it is so small that it can be carried in the pocket almost without its presence being felt, it comprises a representative selection of those agents generally called for in ophthalmic practice, with apparatus for applying them.

Supplied to the Medical Profession, fitted complete, 7s. 6d.

OPHTHALMIC "TABLOIDS."

These are introduced to supply the long-felt want of a method of treating complaints and affections of the eye, which is easy of application, certain in effect, and free from objections from the patient's point of view. They are minute discs as thin as note-paper, extremely delicate in appearance, very soluble, and prepared with a perfectly innocuous and non-irritating basis. Each "Tabloid" holds a definite quantity of alkaloid. With two exceptions they are intended to be inserted within the conjunctival sac as they are, and when placed *in situ*, the eye being kept closed for a few minutes after insertion, they are immediately dissolved in the lachrymal secretion and diffused over the surface of the eye.

We append a list of "Tabloids" already issued, to which we hope to make additions from time to time. In ordering or prescribing it is sufficient to quote the distinguishing letter only, for instance: "Ophthalmic Tabloids," A (B. W. & Co.).

A	Atropia Sulph.	1-200 gr.
B	Atropia Sulph.	1-200 gr.
	Cocaine	1-200 gr.
C	Cocaine	1-20 gr.
D	Atropia Sulph.	1-20 gr.
E	Homatropine Hydrochlor	1-40 gr.
F	Eserine Salicyl.	1-600 gr.
G	Eserine Salicyl.	1-500 gr.
	Tropacocaine	1-100 gr.
H	Homatrop. Hydroch.	1-400 gr.
*J	Hydrarg. Perchlor.	1-1000 gr.
K	Pilocarpine	1-400 gr.
L	Tropacocaine Hydrochlor	1-30 gr.
M	Pilocarpine	1-500 gr.
	Cocaine	1-200 gr.
N	Homatrop. Hydroch	1-600 gr.
O	Homatrop. Hydroch.	1-240 gr.
	Cocaine	1-24 gr.
*P	Boric Acid (perfumed with Otto of Rose)	6 grs.
Q	Duboisine	1-250 gr.
R	Zinc Sulphate	1-250 gr.

* For use in solution.

Supplied to the Medical Profession in tubes, each containing 25 "Tabloids," (except C, D, E, G, L, and O, which contain only 12) at 6d. per tube.

"SOLOIDS."

These are compressed drugs of a characteristic form to distinguish them from "Tabloids"; and the word "Soloid" has been registered as our special and class name for those compressed preparations which are intended for preparing antiseptic solutions. The "Soloids" are quickly and perfectly soluble, without crushing, in cold water, and are highly eulogised by many well-known general practitioners and surgeons.

"Soloids" of Hyd. Perchlor. supplied to the Medical Profession, 25 and 100 in bottle, 9d. and 2/- each; Iodic Hydrarg., 24 and 100 in bottle, 8d. and 1/4 each; L.G.B. "Soloids," in bottles of 100, 2/- each.

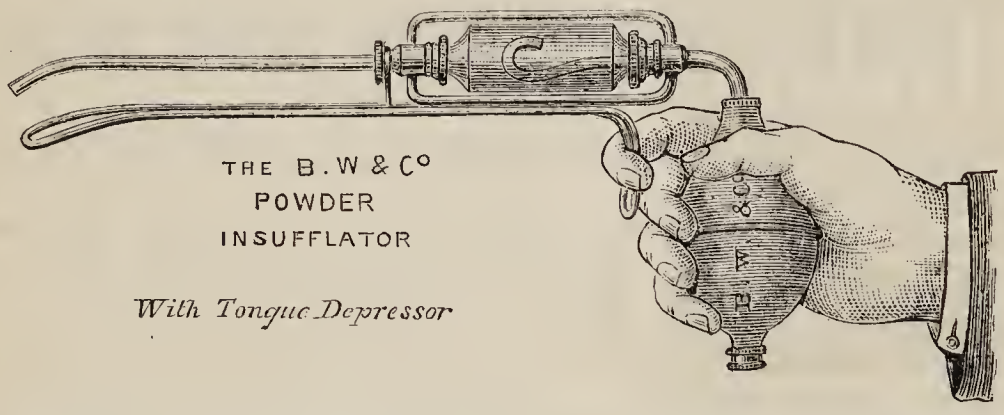
RECENT ADVANCES IN PHARMACY

(Continued).

THE NEW B. W. & CO. POWDER INSUFFLATOR.

(PATENT.)

This new instrument presents conspicuous advantages over all the old forms. It is neat, light, highly finished, and altogether the most satisfactory form yet offered for the application of dry powders by insufflation to the nasal and oral mucous surfaces, and to sores, abscesses, &c., on the outer skin.



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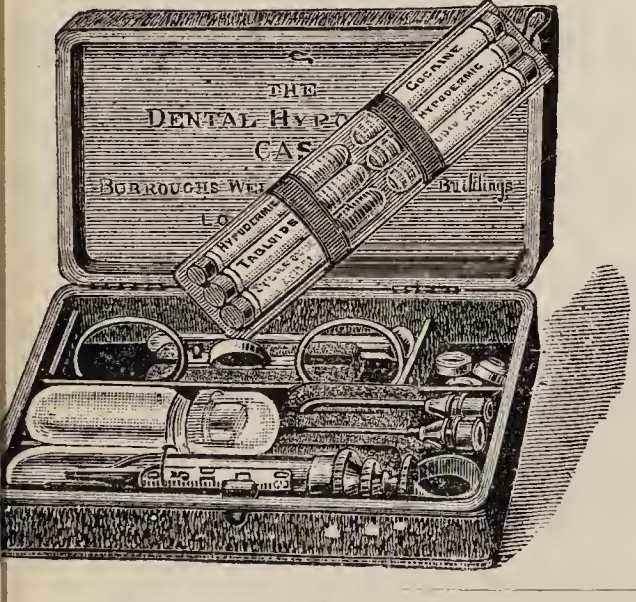

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A HALF-YEARLY JOURNAL

CONTAINING A RETROSPECTIVE VIEW OF EVERY DISCOVERY AND PRACTICAL IMPROVEMENT IN THE MEDICAL SCIENCES.

EDITED BY

JAMES BRAITHWAITE, M.D. LOND.

OBSTETRIC PHYSICIAN TO THE LEEDS GENERAL INFIRMARY.
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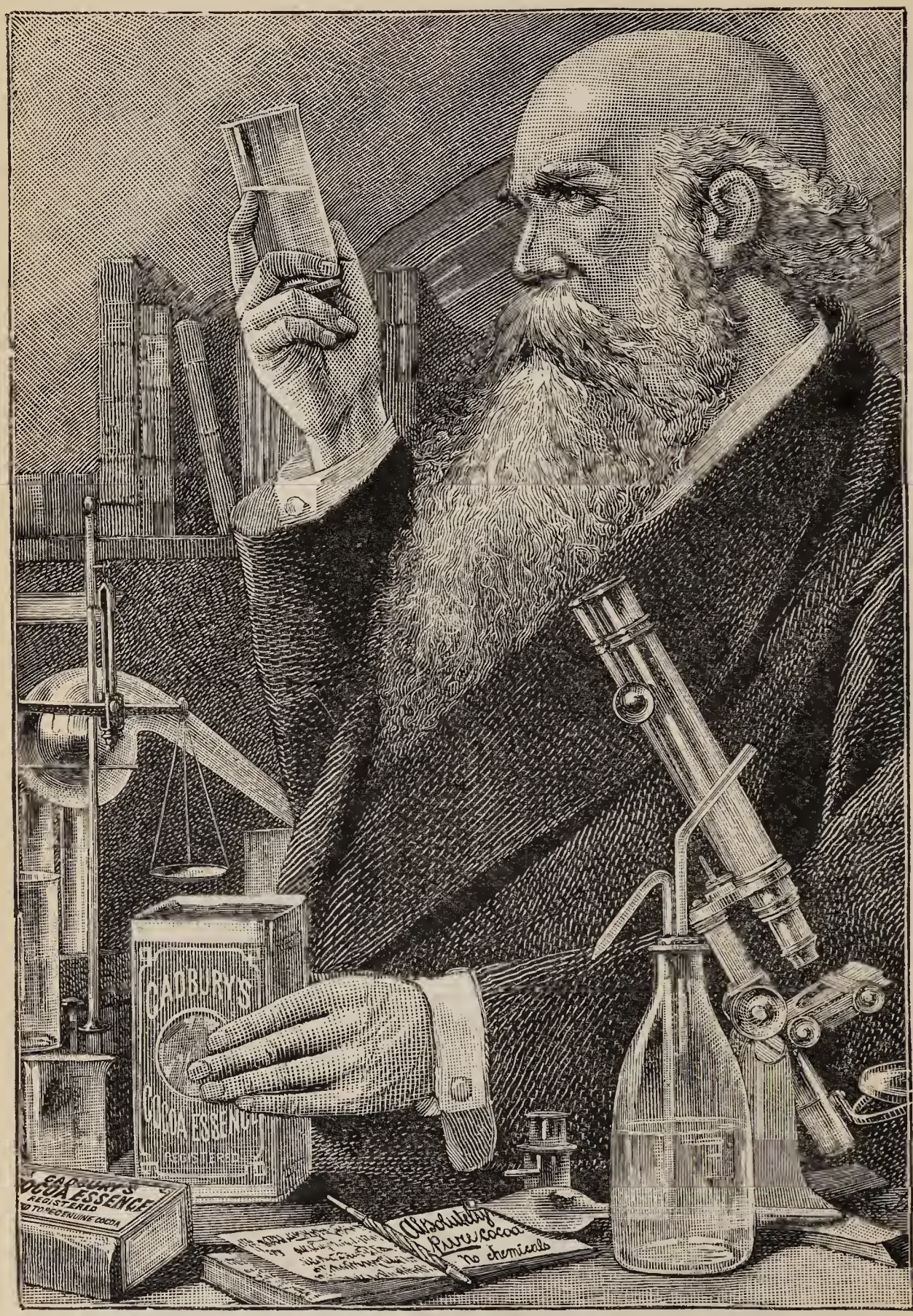

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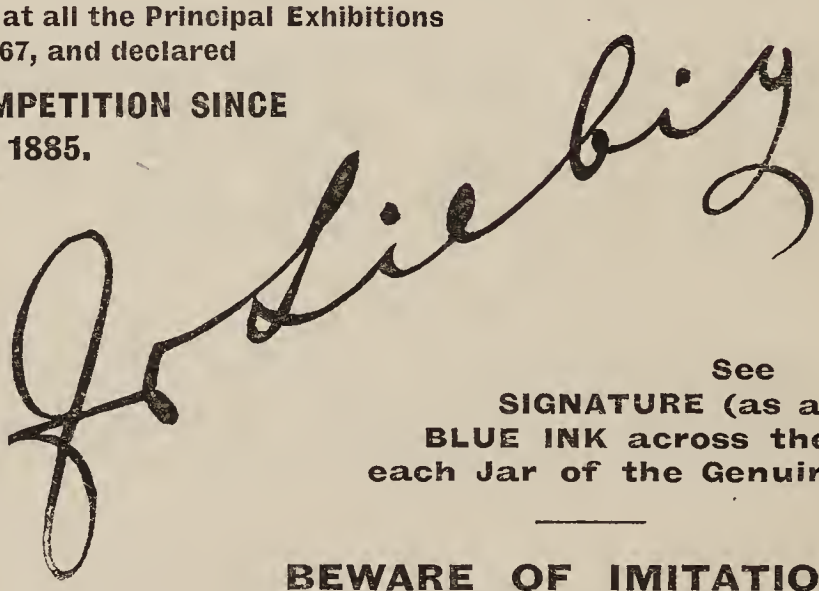

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Synopsis.

An Abstract of the most Practical Articles in this Volume, with other Short Articles from the Medical Journals, showing the most important indications of Treatment, published by different writers during the half year.

Arranged Alphabetically.

GENERAL MEDICINE AND THERAPEUTICS.

ACTINOMYCOSIS.—The Pyæmic Form.

At the Pathological Society, on January 16, 1894, Dr. Kanthack showed a specimen of the pyæmic form of actinomycosis in man. He remarked that actinomycosis usually spread locally by continuity or by the lymphatics, and that its dissemination by means of the bloodvessels was rare, though it was curious that the first case recorded by Israel in 1872 was an instance of this variety. Experimentally, workers had not succeeded in producing this condition in animals. The lesions of actinomycosis had been classified as infective granulomata; but they differed from those of tubercle in their greater tendency to pus formation and to the after-formation of fibrous tissue. This latter was a condition which prevented metastatic diffusion. The large size of the fungus could not explain its want of tendency to become pyæmic, because in its earlier stages it existed in the coccus form, and increased by the throwing out of fine mycelial processes. In the case under consideration the deposit occurred primarily in the liver or in the base of the right lung. These areas were occupied by a soft breaking-down mass suggestive of tubercle. It had spread downwards through the supra-renal body to involve the upper part of the right kidney. The left lung, in its upper and lower thirds, showed masses which looked like tubercle. As the mediastinum was free, the disease could not have spread to the left lung by continuity. There was a body like an infarct in the spleen, a soft nodule containing actinomycosis fungus. Subcutaneous abscesses developed under the skin in several places. All these contained yellow pus, with actinomycosis granules. He embedded this pus slowly in celloidin, and stained by Weigert's modification of Gram's

method, demonstrating the clubs by Delafield's hæmatoxylin and acid fuchsin. To stain the pus from actinomycosis it was best to run it into absolute alcohol, and then embed the coagulated mass. In over three hundred specimens examined from this case clubs were for the most part absent, some indication of them being found only in the liver and the lung. He thought that the rays were of no importance whatever in diagnosis, and believed that when present they were degenerative products reacting like hyaline. Wherever the inflammation of the granuloma was recent, mycelial threads were found amongst the pus cells. He showed specimens from the yellow variety of "Madura disease" to illustrate the resemblance to actinomyces in the arrangement of the mycelium; the fungus in the two diseases he believed belonged to the same class. (The Lancet, January 20, 1894, p. 151.)

ADDISON'S DISEASE.

[Dr. W. Gilman Thompson appends the following conclusions to an important study of Addison's disease and of the adrenals:] First, that Addison's disease is a condition arising from and dependent upon irritation of the abdominal sympathetic nerves through lesions of themselves, their ganglia, or diseased suprarenal capsules. Second, in the great majority of instances (fully 80 per cent.) the disease originates as a secondary or primary tuberculosis in the adrenals, and the sympathetic system is either involved by extension of pathological processes, or is functionally disturbed and irritated through the intimate anatomical connection existing between the adrenals and the relatively large number of nerves which they contain. Third, actual lesion of the sympathetic system, while far more common than heretofore supposed, is not necessary to produce the varied symptomatic phenomena of the disease. Functional disorder, through irritation conveyed from the adrenals, may sometimes cause all the symptoms—just as in chorea and in many of the conditions of aggravated hysteria, and other functional nervous disorders, we are often unable to find definite lesions. Fourth, in a certain proportion of cases (not over 20 per cent.) the adrenals are affected by some other lesions than those of tuberculosis, or else they remain normal (in 12 per cent.), and the sympathetic nerves and ganglia are alone diseased. (The American Journal of the Medical Sciences, October, 1893, p. 395.)

ANÆMIA.—Extract of Bone-Marrow in.

The red marrow of bone being probably the chief agent in promoting the development of red blood-corpuscles, it seemed feasible to suppose that an extract of this substance, if introduced into the human organism whilst in an anæmic state,

might act as a stimulant to the formative process and increase the rate of production of the red corpuscles. In adult animals —as the ox—red marrow is limited to the larger bones of the trunk, the thick parts of the skull, and the heads of the long bones ; the shafts of the latter contain yellow marrow, which is chiefly composed of fat. In young animals—as the calf—red marrow is more abundant and may be found in the shafts of the long bones as well as in the parts just named. As the tissue-forming power in young animals is more active than in older animals the bones of the former are preferable as a source of marrow extract. To prepare the extract the heads of the long bones, obtained from recently killed animals, with other portions of bone which contain red marrow, are broken into small pieces and digested in glycerine with frequent agitation. When the extraction is complete—several days being required—the extract is filtered off and is ready for use (may be obtained from Mottershead and Co., Manchester). It is red or reddish-brown in colour and is devoid of any unpleasant taste or odour. It may be given in teaspoonful doses once or twice a day either out of the spoon or spread between thin pieces of bread. The first case in which I tried the extract was that of a little boy, the subject of hæmophilia. This child had repeatedly been in the hospital under the care of one or other of my colleagues or of myself for attacks of hemorrhage. On each occasion the bleeding ceased ; but the patient never lost the pallor of pronounced anæmia, although he was treated with iron, arsenic, cod liver oil, and all kinds of appropriate nourishment. The last time that he was admitted the red corpuscles were counted after the hemorrhagic symptoms had subsided and were found to be 3,800,000 per cubic millimetre. The patient was then (Sept. 13, 1893) put on marrow extract without any other treatment, and after an interval of three weeks the corpuscles were again counted ; they now numbered 4,190,000, and one month later they reached 4,400,000. Coincidentally with this increase there was a marvellous improvement in the appearance of the child ; his face acquired an amount of healthy colour never previously observed during his many visits to the hospital. In a second case, that of a young woman twenty years of age with long-standing anæmia, the corpuscles numbered 3,700,000 per cubic millimetre ; after taking the marrow extract for three weeks they increased to 4,000,000. She then left the hospital. In another anæmic girl the increase in nine weeks was from 1,350,000 to 3,680,000. A man was admitted for profuse hæmatemesis ; after the bleeding ceased the red corpuscles were found to be reduced to 1,070,000 per cubic millimetre. He was put on marrow extract without other treatment, and, when counted on the fifteenth day, the corpuscles numbered 3,050,000.

I am indebted to our house surgeons, Messrs. Newby and Brown, for these observations. I am encouraged by these and many other favourable results to direct the attention of the profession to marrow extract as an agent capable of affording, to all appearance, valuable aid in the treatment of anæmia and also of oligæmia due to loss of blood from causes such as placenta prævia, hemorrhoids, and wounds. (The Lancet, March 10, 1894, p. 599.)

ANTIDIPHTHERIN.

Kunne (*Wien med. Blätter*, December 14) has tried Klebs's "antidiphtherin" (see *British Medical Journal*, November 11, p. 1070) in four cases of diphtheria in Elberfeld Hospital. In two of these the children were admitted with moderately high fever and slight membranous formation on the tonsils. They were at once treated with applications of a 5 per cent. solution of antidiphtherin three or four times a day, and on the following day the fever had subsided and the membranes had disappeared. In a third case in which the affection was very severe, with abundant formation of false membrane, tracheotomy had to be done on the second day after the commencement of the treatment; and as the application could not be made in the usual way, a 1 per cent. solution of antidiphtherin was dropped into the trachea through the cannula, but without effect. The child died from extension of the disease process to the bronchial tubes. In the fourth case the patient was a member of the assistant medical staff of the hospital, who contracted the disease at a tracheotomy. As soon as false membranes were visible, applications of antidiphtherin were begun. The remedy appeared at first to have a favourable effect; the membranes began to disintegrate, and the fever subsided on the day after treatment was begun. Soon, however, the membranes formed again and spread over the palate and ulvula, and at the time of Kunne's report, the issue of the case was still doubtful. He thinks, however, that it may fairly be concluded that in this case the remedy had no particular effect. (Epitome of the British Medical Journal, December 30, 1893, p. 107.)

[Antidiphtherin is prepared by Prof. Edwin Klebs at Karlsruhe, and can be procured from E. Merck, of Darmstadt.]

ANTIFEBRIN, ILL-EFFECTS OF.

Notwithstanding the experience of many apparently to the contrary, the conclusion must be permitted that to give antifebrin in doses of 5, 6, 8, and even 10 grains, still more to repeat these after a short interval, is a highly injudicious procedure. Such doses are altogether excessive. They are

equivalent to about 25, 30, 40, and 50 grains of antipyrin. The repute of the drug has probably suffered in the past from the circumstance that this fact of its greater strength has been overlooked. Indeed, the dosage employed has been so large as to lead one to surmise that in the minds of many observers antifebrin is regarded as a drug of the same strength as antipyrin. (Report of Therapeutic Committee of British Medical Association, British Medical Journal, January 13, 1894, p. 89.)

[See also "An Inquiry into the Ill-Effects of Antipyrin, Antifebrin, and Phenacetin," at p. 133 of this volume of the *Retrospect.*]

BERI-BERI.

Beri-beri is a disease confined for the most part to the coloured races of mankind. It is characterised by paresis, often amounting to actual paralysis of the extremities, generally the lower only. There is very frequently œdema present, which generally disappears early in the course of the illness. Tenderness of the muscles is a frequent symptom and is rather persistent. The sphincters are rarely, if ever, affected; the knee-jerks are always absent and very late in returning. Several circulatory disturbances arise often in the course of the disease. The heart is in many cases dilated and irregular in action, transient murmurs being present. Œdema of the lungs and pleural effusions are not infrequent complications in serious cases and may be the cause of death. When the disease is chronic, wasting of the muscles is a marked feature, and it is long before the tone and power of the muscles return. There is sufficient evidence that the disease occurs with frequency in certain ships and develops at sea often many weeks after leaving a foreign port. These facts are, of course, suggestive that it is possibly infective in origin. The disease is endemic in many parts of the East, where the mortality from it is said to be very high. The onset of beri-beri is somewhat gradual, the weakness of the lower extremities which is often the first noticed symptom being generally preceded by pains in the limbs and back. The amount of weakness present varies from slight paresis to actual paralysis, with foot-drop and complete inability to stand. When the patient can walk the gait is very reeling and unsteady, the feet being sometimes shuffled along the ground. Sometimes the heels are brought to the ground first with a stamping action, as in ataxy, and sometimes the toes are caught in the ground as the foot is brought forward; this latter form of gait is due to the fact that the extensors have chiefly suffered, causing the characteristic foot-drop. The arms are sometimes weakened but seldom paralysed. Tenderness of the muscles is a constant symptom and may be very marked,

causing the patient to scream when they are grasped; this symptom is most marked in the calf muscles and the thenar and hypothenar eminences. Œdema is very frequent and occurs early. It may be present in the lower extremities only or may be general, affecting the face, hands, trunk and legs, and giving to the patient the appearance of one suffering from renal disease. I have even seen œdema of the soft palate and fauces. It generally disappears quickly when the patient is at rest in bed under the influence of saline aperients. The pre-tibial and pre-sternal regions are the parts in which it lingers longest. The absence of œdema in some cases has led to the use of the terms "wet" and "dry" as applied to the disease; but it would seem that such terms are not of much value, only pointing to the absence or presence of a symptom. We do not speak of wet and dry heart disease. Anæsthesia is generally present at first; it is variable and evanescent, and is usually confined to the lower extremities. Accurate results are difficult to obtain on account of the nationality of the patients. Loss of the sense of touch and, consequently, imperfect coördination in the use of the fingers, especially of the index-finger and thumb, often persist for a long time; this is easily tested by putting a pin in the coverlet and making the patient pick it out. The heart is frequently dilated, the apex-beat being displaced outwards. Murmurs are often present both at the apex and over the pulmonary and aortic areas. These disappear as the dilatation subsides. When murmurs are absent the sounds are frequently reduplicated. The heart's action is in many cases very rapid and irregular, the pulse sometimes reaching from 120 to 150. All these phenomena disappear gradually under the influence of rest and digitalis. Anæmia is a constant symptom and is sometimes profound. The blood, so far as I know, shows under the microscope only the usual changes present in anæmia. I have never observed retinal hemorrhages or other fundus changes. Œdema of the lungs, if at all extensive, should be looked upon rather as a complication than a symptom, and is of dangerous import. I have seen serous effusion into the pleural cavities which had to be treated by aspiration, but I do not think it is common. Ascites I have never seen, and I have not heard of it occurring. When death occurs it does so generally early in the disease unless the patient dies from some intercurrent affection such as pneumonia. In a fatal case (a Chinaman) which I saw, death occurred after fourteen days' illness. One of the most prominent symptoms was intense pain in the epigastrium, which is said to be often present in fatal cases. Dyspnœa was very marked and the respiration was very hurried, being from 50 to 60 per minute. This may have been in part due to œdema of the lungs and pleural effusion, and

possibly also to involvement of the pneumogastric nerves. Diaphragmatic and intercostal paralysis, however, was absent. Convalescence occurs very slowly. The legs are often wasted to mere sticks, the reaction of degeneration is well marked in the muscles and the skin becomes peculiarly dry and harsh. It is often many months before the patient is able to walk perfectly, and the knee-jerks, as in diphtheritic paralysis, are very late in returning. The urine is generally free from albumen. The temperature, except for some slight rise at the onset, is usually normal. In a case of beri-beri at the Seamen's Hospital, after an illness of fourteen days' duration, the body, on post-mortem examination, was found to be well nourished and there was no œdema; rigor mortis was well marked. About half a pint of clear serous fluid was found in each pleural cavity. The lungs were very œdematous and contained very little air, which was of a bluish slate colour. The heart weighed fifteen ounces; the left ventricle was dilated and the muscle soft and friable; there were no valvular lesions or pericardial effusion. The liver, spleen, kidneys, and stomach appeared to be healthy. The brain revealed no abnormal changes to the naked eye. The pneumogastrics, left phrenic, left sciatic, and anterior crural nerves were dissected out and examined microscopically. Many sections of the nerves were cut, but no pathological changes were made out. For this careful and thorough description of beri-beri I am indebted to the notes and observations of my house-physician, Dr. Spencer. The course of the whole disease resembles a peripheral neuritis, and is altogether different from that which would be caused by a hæmatozoon, as is suggested by Sir Joseph Fayrer in "Quain's Dictionary of Medicine." (Dr. Curnow, The Lancet, January 13, 1894, p. 80.)

CANCRUM ORIS AFTER TYPHOID FEVER.

At the Clinical Society on October 27, 1893, Dr. Frederick Taylor showed a girl, aged 11, who developed symptoms of cancrum oris when suffering from a severe relapse of typhoid fever. On a temporary molar being removed foul pus escaped, and this appeared to be the determining cause of the trouble. Carbolic acid solution (1 in 10) was at first used every half-hour, and later nitric acid was freely applied under an anæsthetic, which at once stopped the sloughing process. The patient made a good recovery, but some contraction of the mouth resulted. (The Lancet, November 4, 1893, p. 1128.)

CHLORALAMID, INDICATIONS FOR.

Dr. T. Hobart Egbert has used this remedy in more than one hundred cases, and the hypnotic and soporific effects were uniformly gratifying. In preparing patients for operation, of

even more importance than the orthodox laxation is the securing of refreshing sleep and tranquillity of mind. Opiates are excluded from their subsequent depression and digestive disturbances, and many modern hypnotics are likewise inadvisable on account of their marked after-effects. If insomnia is not dependent upon actual physical pain, this remedy is indicated, because it has a tonic action on central nervous cells and fibres, and it relieves intra-cranial congestion. Restlessness, insomnia, and coma vigil, as seen in typhoid fever are indications for this drug, which is best administered in brandy and water, on account of its thus relieving the debility incident to the disease. In the insomnia or fatiguing sleep of nervous prostration, in nocturnal restlessness of excessive mental exertion or emotion, good results are likely to be obtained. The prolonged use of this remedy is not likely to occasion either functional or organic disturbances, nor to lessen its power to relieve. In chorea it should be administered systematically, and best in combination with hyoscyamus and valerin. In the disturbed sleep with unpleasant dreams resulting from alcohol, tobacco, and sexual excesses, it has a special field of usefulness. In mania and melancholia it is superior to chloral and the bromides. It is best administered in extemporaneous elixir, using the elixir simplex of the United States Pharmacopœia.—*Notes on New Remedies*, 1893, No. 1, p. 1. (The American Journal of the Medical Sciences, September, 1893, p. 337.)

CODEIA.

Invaluable as opium and its alkaloid morphia are, they, however, have several disadvantages, some of which can be avoided by the use of codeia, which has peculiarities of its own worthy of remark. Many patients cannot take opium or morphia on account of the sickness which follows the next day. Codeia rarely produces sickness, and after taking, say, two-thirds of a grain in the evening of one day there is freedom from any effects whatever after a cup of coffee the next morning. This is a very important practical point, provided the codeia answers the same end as the opium. The former drug seems to have a special action upon the nerves of the larynx; hence it relieves a tickling cough better than any ordinary form of opium. Two-thirds of a grain may be given half an hour before bedtime. It was in my own case that I first began to use codeia. For more than twenty years, usually once every winter, I have been seized with a spasmodic cough just before going to sleep, which becomes so severe that I am compelled to get up and sit by the fire. After an hour or two I return to bed and am free from the cough till the next winter. In other respects I enjoy good health. Once,

and once only, the affection returned on two or three consecutive nights. There is no expectoration, and the affection is as much a laryngeal spasm as a cough. The cold which originates this is usually trivial. If I take opium in any form I am sick the next day, and if I take chloral I have a headache and feel unfit for work. Many years ago I found that one grain of codeia taken about two hours before bedtime absolutely stops the attack and leaves no unpleasant effect the next morning. As I have some warning when an attack is impending I am now able to defy the cough. In cases of vomiting from almost any cause quarter-grain doses of codeia in an effervescing mixture usually answer exceedingly well, or half a grain may be taken at rather longer intervals. In the milder forms of diarrhœa two-thirds to one grain of the drug usually answer most satisfactorily, and there are no unpleasant after-effects. If, however, there is great pain the analgesic effect of codeia may not be sufficient, and opium itself or morphia hypodermically may be required. There is a curious form of diarrhœa met with in elderly women, the etiology of which I do not quite understand. Before the proper time to get up and perhaps once or twice during dressing there occurs a mild form of diarrhœa. As this continues year after year it gradually impairs the health. I find it best treated by half a grain of codeia, or even two-thirds of a grain, about four o'clock in the morning. It should be given in the form of a pill. Sometimes chronic neuroses may be cured by breaking the continuity of the pain, for which purpose I have found this drug peculiarly suited. It is better in such cases to prescribe it in a rather large dose at a long interval, as two-thirds of a grain or a grain every twenty-four hours. This need not prevent other treatment being adopted if necessary. Codeia will not entirely take the place of morphia, for it is not so powerful. It will not relieve an intense pain, but it has distinctly its own sphere of action. It is usually given in the form of pills, as it is so difficult to keep in solution. This answers very well in diabetes, in which disease, as is well known, it is invaluable. In many cases, however, a solution is decidedly preferable, and if it is dissolved by heat and a little spirit added it keeps very well except in cold weather, when it should be kept in a room with a fire. A small quantity only should be prepared at a time. (Dr. Braithwaite, The Lancet, February 10, 1894, p. 331).

DIPHTHERIA.—A New Treatment for.

Sig. Bianchini Antonio presents his method, which is based upon the antiseptic action of phenic acid. Absorbent cotton, kept constantly moistened in a two per cent. solution, is worn about the neck, and by inspiration—for it is a valuable antiseptic—

it is carried to the diseased surfaces (pharynx, tonsils, larynx). At the same time fifteen to thirty drops of tincture of the chloride of iron, dissolved in aromatic water and simple syrup, is given about every hour. In grave cases the affected parts are touched twice daily with the following mixture: Salicylic acid, 3; absolute alcohol, 20; resorcin, 2; and glycerine, 10 parts. By a careful examination of the urine the amount of phenic acid which is absorbed can be ascertained, and the use of the acid can thus be regulated. The advantages of this method are: (1) The ease of application of the remedies; (2) The action of the acid is continuous, regulated, local, and general; (3) From the first application the fever yields, but tends to again rise if the treatment is suspended; (4) The general condition improves from the beginning.—*La Riforma Medica*, 1893, No. 204, p. 647. (The American Journal of the Medical Sciences, February, 1894, p. 185.)

Diphtheria.—Micro-Organisms of.

We know now that diphtheria is always associated with the presence of micro-organisms characterised by definite morphological and biological characters. The clinician gladly accepted this method of differentiation, because the attempt to define diphtheria according to its clinical features was so completely shattered. We regard now those pseudo-membranous inflammations as belonging to diphtheria in which the Klebs-Loeffler bacillus is found. When that is not present, no matter what the extent and the character of the local lesions, no matter what the severity of the symptoms, the disease is not diphtheria. The Klebs-Loeffler bacillus is a small organism not much larger than the tubercle bacillus. Its most striking feature morphologically is its variation in form and its irregularity in staining. The ends of the organism are frequently clubbed, sometimes at one and sometimes at both ends, and in most cases when stained it shows a series of clear spaces along with intensely stained particles. The form and size varies greatly under various circumstances. In different cases, it appears in some much larger and more irregular than in others, and in the same preparation great irregularity may be seen. It grows readily on a variety of culture media, and most readily on the modified blood serum first introduced by Loeffler. When cultivated on potato it is much larger and more irregular in form than when grown on any other medium. The organism is pathogenic for a number of animals, especially for young cats and guinea-pigs. In guinea-pigs the most virulent form of the organism will produce death in from thirty-six to forty-eight hours. Like some other organisms, there is a marked difference in its virulence. While cultures from some cases will always produce

death in thirty-six hours, in others death will not take place for several days; in others again the animal may survive the primary inoculation, and afterwards die of paralysis after an interval of three or four weeks. In still other cases no results may follow inoculation. (Prof. Councilman, The American Journal of the Medical Sciences, November, 1893, p. 541.)

DIURETIN.

Dr. E. Main believes that this drug owes its activity to the theobromine which it contains. The insolubility of the latter has been overcome by its forming a double salt with salicylate of soda, which is soluble in one-half of its weight in water, and is readily absorbed. In spite of much contradictory evidence, it is believed that this drug owes its diuretic properties to a direct and non-irritant action upon true renal tissue. Whether or not it has any influence upon the heart is not altogether clear. Aside from its use in œdema and as a diuretic it has two especial uses. In children it should not be administered under the age of eighteen months, as it is likely to produce a digestive disturbance and gastro-intestinal irritation. If used in scarlatinal nephritis it should not be administered until after the termination of the first stage of the disease. After operations upon the urinary tract it has been found that it prevents the onset of urinary fever, and as well shortens the time of convalescence after the operation. It does not apparently directly influence the respiration nor excite the nervous system so much as caffeine. With the exception above noted it does not produce digestive disturbances. Beyond diuresis it is not likely to produce urinary symptoms, nor does it have a cumulative effect—nor, indeed can a tolerance be established. The daily dose is from 60 to 90 grains, divided into 15-grain doses every two or three hours. Even 150 grains have been given without danger. With children the solution can be sweetened and a small quantity of alcohol added for its preservation.—*Bulletin gén. de Thérapeutique*, 1893, 38e liv., p. 299. (The American Journal of the Medical Sciences, March, 1894, p. 320.)

GRAVES'S DISEASE, SOME LESS-KNOWN FACTORS OF.

At the Medical Society on October 21, 1893, Mr. Arthur Maude read a paper on "Some Less-known Factors in Graves's Disease." He said that by watching cases very carefully and continuously he was convinced that some variation in the size of the thyroid gland was always present even in very early cases. There was little statistical evidence that Graves's disease was unknown in districts where goitre was common, as was commonly stated, but it was rare in India. On the other

hand, he had found 15 cases amongst 55 of enlarged thyroid gland in a small country district. Graves's disease was said not to occur in previously goitrous persons, but he had collected seven cases of which he gave details. Attention was then turned to the connection between Graves's disease and myxœdema, and to the results of operation on the thyroid gland for Graves's disease, 20 of which were collected last year by him. He then reviewed the nervous disturbances of Graves's disease which were not due to vaso-motor changes, beginning with the pyschoses. He described two conditions as common: (1) a hyper-sensitive notion of duty and (2) an incoherence of ideas; and he described a disturbance of consciousness resembling ambulatory epilepsy. After mentioning the tremor as almost the commonest symptom of the disease, and touching briefly on the existence of convulsions, he described a peculiar form of clonic spasm in a young woman. The bulbar signs and the numerous cases of ophthalmoplegia were reviewed. It was claimed that many of the common symptoms were due to peripheral neuritis—*e.g.*, cramps, hyperæsthesia, symmetrical paresis of the legs, pains and lowered patellar reflexes. Glycosuria was never found in these cases. On the question of pathology Mr. Maude thought that no focal lesion in the sympathetic or medulla could possibly explain the condition, which must be due to some general nerve poison, probably to be found in the thyroid gland. The fact that the thyroid gland was already enlarged, that operations on that gland had nearly always relieved the symptoms, and the connection with myxœdema were all evidence, he thought, in support of this theory. (The Lancet, October 21, 1893, p. 1003.)

GUAIACOL.

M. L. Guinard has made use of this remedy by painting it upon the skin. His work has been very carefully carried out, and from it he has reached the following conclusions:—The lowering of temperature, which is determined by the painting of this drug upon any region of the body, is not the result of absorption, because this fall takes place too rapidly. Experiments upon animals show that it acts upon the centres of thermogenesis by exciting the peripheral nerve terminations, and thus reflexly upon the functions of the centres. The presence of the drug in the urine shows that it has entered by way of the respiratory passages, because if it is excluded from them it is not found in the urine. The quantity of vapour which can be absorbed in this way is not sufficient of itself to produce this fall of temperature. In the local or general effects of the remedy it is necessary to consider its quality, the individual susceptibility of the subject, and the condition of his health. In febrile cases

the diminution of temperature is more noticeable than in non-febrile individuals. With the last, however, especially when the drug is irritant and when the individual possesses a particular susceptibility of the skin, as in the rabbit, its action may be manifest. The effects are more marked and more intense when the painted region is protected from the air by an impermeable covering. The use of guaiacol in this way represents an original therapeutic measure, simple and convenient, which may render great service when its indications have been determined by a larger number of clinical experiments.—*Bulletin gén. de Thérapeutique*, 1893, 40e liv., p. 339. (The American Journal of the Medical Sciences, March, 1894, p. 315.)

Guaiacol.—External Use of, in Tuberculosis.

In a recent issue of the *Medical Week* Professer R. Lépine presents the following conclusions regarding the endermic application of pure guaiacol:—(1) External applications of guaiacol are likely to prove extremely useful in certain cases of pyrexia of tubercular origin; (2) The application of from one to two cubic centimetres is practically devoid of all risk of collapse, provided the tubercular process has not reached the stage of suppuration and cavity-formation. In the latter case two grammes may cause death, as in a patient under Dr. Bard's observation; (3) Except in cases of extreme irritability of the skin, the application of pure guaiacol is never followed by any inflammatory reaction; (4) The only disadvantages of this method in the earlier stages of pulmonary tuberculosis are profuse sweating, with or without shivering, and a few other symptoms of a very mild description, so that this remedy is to be preferred to antipyrine and even to acetanilide in many cases of phthisis, especially as it has no deleterious influence on digestion. Dr. Lépine agrees with Bard that guaiacol is absolutely without effect on patients suffering from hectic fever due to successive exacerbations of the pneumonic process or to the presence of suppurating ulcerations. On the other hand, it produces a powerful and lasting effect in cases of simple tubercular pyrexia, due to the formation of successive crops of granuloma; in short, whenever the fever is not due to septic infection superadded to the tubercular process. The influence of the guaiacol is largely to be referred to a reflex action on the nerve centres through the peripheral nerve endings, as experiments have demonstrated that the temperature is not affected in animals if the site of application is previously anæsthetised. (New York Medical Journal, November 25, 1893, p. 635.)

Guaiacol.

Stolzenburg (*Berl. Klin Woch.*, January 29, 1894) has tried in Senator's clinic the external use of guaiacol as an antipyretic in

the way recommended by Sciolla. Most cases were instances of the pyrexia of phthisis, and only two or three of acute disease. The guaiacol was rapidly painted on a part of the body, generally an extremity, and an impervious bandage applied. Two c.cm. were found to be sufficient for the purpose, and in feeble patients 1 c.cm. should be used at first. In the course of the next few hours the temperature fell, with copious sweating but it soon rose again, often with shivering, attaining a greater height than before. In most cases the treatment had to be discontinued, owing to objection on the part of the patients; the smell is also unpleasant. No real influence on the disease could be made out. Its continued use cannot be recommended. Larger doses may produce collapse. The absorption through the skin is remarkable, but beyond question. (Epitome of the British Medical Journal, February 24, 1894, p. 32.)

LEAD COLIC. — Treatment by Large Doses of Olive Oil.

Dr. Combemale believes that there is a twofold indication in this condition—to clear the intestines and at the same time to relieve the pain. Weil has reported five cases, in which the oil was taken at a dose of a glass, six or seven ounces, each day, the cure following in from three to five days of treatment, and coinciding with the copious stools induced by the oil. But before this event, from the first glass of oil the pains markedly diminished, showing that in lead colic, besides its purgative action, olive oil has an analgesic effect upon the alimentary canal. In these cases not only was the colic cured, but as well the other manifestations of plumbism, as the myalgias, arthralgias, cutaneous anæsthesias, headaches, and vertigos. The four cases reported by the author confirm the opinions given above as to the value of this remedy. If the oil is vomited, three grains of menthol administered in solution, fifteen minutes preceding the next dose, may cause it to be retained. As to the analgesic effect upon the alimentary canal of the oil or the products resulting from its decomposition, neither oil, nor glycerine, nor fatty acids appear to possess this property. The relief of pain appears to be secondary to the real action of the oil. The relief from pain may be either due to simply obviating intestinal obstruction or to removing from the economy the lead in the various forms with which it is impregnated. The first is an undoubted fact, although he is not far from believing that the oil aids in removing from the economy the stored-up lead. It may, with the albuminate of lead, form a compound, insoluble yet saponifiable, which can be with difficulty absorbed from the intestine.—*Bulletin général de Thérapeutique*, 1893, 20e livr., p. 433. (The American Journal of the Medical Sciences, September, 1893, p. 332.)

MUMPS.—Period of Contagiousness.

Rendu (Société Médicale des Hôpitaux, séance of February 10th, *Revue mensuelle des Maladies de l'Enfance*, March, 1893, p. 124) reports two cases coming under his observation which throw some light upon this question. In one case an adult had contracted the disease after visiting a relative in whom it did not become manifest until a day after the visit. The second patient, a child of ten years, had also become infected from a person in whom the disease was still latent. These facts show that the contagion of mumps manifests itself at the end of the period of incubation, and that transmission occurs through the expired air. The maximum of virulence of the germ appears to be in the first forty hours of invasion, but this does not assure the absence of virulence during the following days. According to the present practice of quarantine in this disease, school-children are not permitted to return to school for three weeks after their cure, which entails a month of loss for an illness of eight days' duration, while immunity to other pupils is not thereby assured, and the diffusion of the epidemic is not suppressed. At the time that the disease declares itself, it can be presumed that in the preceding forty-eight hours the child has succeeded in infecting his neighbours. On the other hand, it is more than probable that after four or five days of the disease, and especially after the disappearance of the swelling, the contagion no longer exists. It therefore seems to the author that this quarantine of three weeks can be properly shortened, since it does not prevent the diffusion of the disease, which is accomplished largely at a time when the diagnosis is impossible. He believes that measles comes properly within the same category. (The American Journal of the Medical Sciences, October, 1893, p. 498.)

MYXŒDEMA.—Changes in the Urine during treatment with Thyroid Extract.

At the Clinical Society on Nov. 24, 1893, Dr. Ord and Mr. E. White gave their results of some observations on a case of myxœdema treated by administration of the thyroid gland of the sheep, with special reference to changes occurring in the urine. The notes of this case were first presented, showing the condition of the patient before treatment. The case was typical and of some years' duration. Dr. Ord and Mr. White had undertaken an inquiry into the possibility of the occurrence of changes in the urine, indicating changes in the chemistry of the body after the administration of the thyroid gland in myxœdema. For more than a week before the commencement of treatment a careful measurement and analysis of the diet of the patient was instituted. The quantity of the urine was registered daily, and it was analysed daily in reference to total solids, ash, urea,

nitrogen, chlorine, and phosphoric acid. After the institution of the treatment, the same diet being used, the observations were continued. From a chemical point of view it resulted that a large increase of excretion of nitrogen, chiefly in the form of urea, followed the administration of the thyroid gland. There was in this case no marked change in the excretion of chlorine; it was, in fact, slightly increased. At the same time there were an increase in the quantity of urine, a decided rise of the temperature of the body, and a rapid loss in weight. The physical and mental conditions of the patient underwent rapid improvement, amounting to almost a cure. They had to remark that the changes in the urine in such cases were of great value in presenting some estimate of altered metabolism following the use of the thyroid gland. They recognised that their observations were not final, but must be supplemented by more numerous and more varied experiments. They went on to consider some of the methods of preparing and administering the thyroid gland as a whole, as glycerine extract, as powder, &c., and offered some remarks regarding dosage. Mr. E. White pointed out that the curve of nitrogen excretion corresponded very closely to that of the excretion of urea. Before the treatment was commenced the quantity of nitrogen ingested was in excess of that excreted, but this was reversed when the treatment was inaugurated. (The Lancet, December 2, 1893, p. 1388.)

OSTEO-ARTHRITIS, WITH FIBROID NODULES.

At the Clinical Society on December 8, 1893, Dr. Newton Pitt read a paper on four cases of osteo-arthritis with fibroid nodules. In one case there was also extensive fibrinous exudation with peripheral asphyxia. Attention was drawn to references, scattered through recent medical literature, of cases of osteo-arthritis with subcutaneous nodules occurring independently of acute rheumatism, and cases of extensive fibro-gelatinous deposits. Nodules were characterised by the presence of organising connective tissue, with evidence of irritation as shown by cell infiltration extending for some distance around and by the presence of endarteritis in the neighbouring arterioles. The widespread existence of such a condition sufficiently accounted for the peripheral asphyxia. The following conclusions were formulated. Fibroid nodules might occur in connection with osteo-arthritis. They presented the same physical characters and probably a similar microscopical structure to those found with acute rheumatism in children, but they differed in the following points:—(1) They occurred in adults; (2) they were much more chronic, and lasted for months or years; (3) they were at times extremely painful and tender, and the painful state might recur time after

time; (4) they were unassociated with any cardiac lesion; (5) they might be of the size of small shot, but occasionally might measure as much as an inch in diameter. Dr. Ord congratulated Dr. Newton Pitt on having attacked the question from an open and philosophical point of view, having assumed very little and yet having taken so large a purview. It was wise to include both acute arthritis and osteo-arthritis when discussing the subject of the occurrence of nodules in connection with joint trouble. It was true that the nodules were usually associated with acute rheumatism, but apart from its clinical history, it was not yet known what was the essence of that disease. There was great variety in these nodules in point of hardness, vascularity, tenderness, and sizes, and these perhaps corresponded with varieties of influence in their production. Was it not possible that erythema nodosum was a step further in the same direction of nodular development, for the latter affection was frequently associated with acute rheumatism? There was certainly a great tendency to the occurrence of these nodules with all kinds of chronic as well as of acute joint affection. Though alternation had often been noticed, yet sometimes both the joint affection and the nodules developed simultaneously. In some of his own cases in which nodules had developed important disturbances of the circulation had been noted, such as asphyxia of the hands and feet. A further temperate working out of this question might help in the elucidation of what were perhaps kindred phenomena, such as the changes in the fingers and hands seen in Raynaud's disease, &c. (The Lancet, December 16, 1893, p. 1511.)

OXYGEN INHALATION.

The inhalation of oxygen is of marvellous value in some cases of severe pneumonia, especially when there is much lividity and cardiac failure and at the crisis. It fails in other cases, and I should be inclined to suggest that where the condition is one of mainly cardiac failure and collapse more benefit is obtained than in cases where the serious condition is especially due to a widespread œdema or bronchitis; but on this difference between the two classes of cases I should be glad to learn the experience of others. Some cases of severe bronchitis and asthma have, however, been benefited by oxygen. In one case of acute upon chronic bronchitis in an elderly lady I saw some, though not very marked, relief of the dyspnœa; (2) in cases of empyema, pneumothorax, and pleuritic effusion great relief can be afforded to the dyspnœa and cardiac failure until operative measures are undertaken; (3) cases of feeble patients with phthisis may be relieved, but more often there is no marked change; (4) cases of weakly convalescents and feeble cardiac

cases will often derive great benefit, and inhalations may be given periodically for weeks; but oxygen will not restore to health, it must simply be used as an adjuvant; (5) cases of chlorosis, pernicious anæmia, and leucocythæmia receive great temporary benefit, but the oxygen must be supplemented by other drugs; (6) conditions of asphyxia and lividity from respiratory engorgement due to cerebral failure and also coma from various cases may be relieved; (7) its value in uræmia, though insisted upon by French writers, is still problematical; (8) it may also be of value in diminishing the risks of anæsthesia. (Dr. Newton Pitt, Medical Press and Circular, January 24, 1894, p. 80.)

PERFORATION OF INTESTINE IN TYPHOID FEVER.—Abdominal Section for.

At the Clinical Society on March 9, 1894, Dr. Cayley and Mr. Bland Sutton related a case of perforation of the bowel in typhoid fever treated by washing out the peritoneal cavity and excising the ulcer. The patient, a young man aged 25, was seized with symptoms of perforation about the twenty-fourth day of what seemed to be a mild attack of typhoid fever. Previously there had been no diarrhœa or other symptoms of intestinal ulceration. There were sudden excruciating pain in the lower part of the abdomen, vomiting and collapse; his temperature fell to 97° F. and his pulse became extremely small; there was great tenderness over the abdomen, and there seemed to be signs of the presence of gas in the peritoneal cavity. The conditions appeared to be favourable for operative interference; though the fever had run rather a protracted course, the type had been mild, and before the perforation the patient's strength had been well maintained. From the absence throughout of diarrhœa or other intestinal symptoms, it might be inferred that the ulceration was slight in amount and probably chiefly situated rather high up in the ileum, where it would be more easily accessible. The lower down the ulcers the more severe was the diarrhœa. It was usually most severe when the ulceration extended into the large intestine, next when it was chiefly about the ileo-cæcal valve, and least when, as was sometimes the case, it was mainly in the higher part of the ileum, though these ulcers were very liable to perforate. Moreover, as this was about the twenty-fourth day of the illness, it was hoped that the fever was drawing to its termination. Accordingly, five and a half hours after the accession of the symptoms, the collapse having passed off, Mr. Bland Sutton, who was assisted by Dr. Berkeley, opened the abdominal cavity by an incision 8 cm. long in the linea alba, between the umbilicus and symphysis pubis; the recto-vesical

pouch was found to be full of a brown turbid fluid which had escaped from the bowel, and bubbles of gas were being given off. On withdrawing a coil of intestine from the pelvis a perforation was found in the centre of an oval ulcer, the outline of which was plainly apparent through the intestinal wall. In the adjacent mesentery a large pink gland was visible, no other ulcers being seen. The ulcer was excised by an oval incision, the cut edges of the mucous membrane were drawn into apposition by a continuous silk suture, and then the serous surfaces were brought together by eleven Lembert's sutures; the peritoneal cavity was freely irrigated with warm water, and the stitched portion of the gut was laid immediately under the wound in the abdominal wall, which was then closed in the usual manner. The operation lasted nearly an hour, a considerable portion of which time was occupied in washing out the peritoneum. At the end of the operation the patient was much collapsed, but gradually rallied and lived till the sixth day, passing ultimately into a typhoid state, with great prostration and rambling delirium. Some leakage of gas took place, and consequently the central stitch of the abdominal incision was removed in order to allow a free vent. He was at first fed by nutrient suppositories and enemata, but subsequently took liquid food by the mouth and had a craving for solid food. He suffered a good deal from hiccough. He passed urine and motions without difficulty and during the last two days had diarrhœa, which seemed to be one chief cause of the final fatal prostration. He suffered no pain, and there was no sign of peritonitis. Permission was obtained for a partial examination. The sutured section of bowel was found to be adherent to the edges of the incision through the abdominal wall. Fluid could readily be made to gurgle through this portion of the gut by pressure on the intestine above without any leakage taking place. The escape of gas was due to the sloughing of a stitch exactly in the middle of the suture. The perforation was situated twelve inches above the ileo-cæcal valve. The shock of the prolonged operation no doubt diminished the patient's chances of rallying, and in any future attempt it would probably be better not to excise and suture the ulcer, but after washing out the peritoneal cavity, to attach the perforated bowel to the abdominal incision and leave a fistula which could be dealt with subsequently. (The Lancet, March 17, 1894, p. 674.)

PHENACETIN.—Ill-effects of.

Ill-effects with this drug have thus, so far as the experience in these reports goes, been strikingly infrequent. As regards the importance attached to them when they have been met with,

only one (No. 5) of seven observers who have noted them has been led on their account to prescribe the drug less frequently. The others expressly state that they are of no importance whatever, and affect in no way the great value of the drug. There is, indeed, striking unanimity amongst observers as to the great value of this drug, especially as an analgesic. As regards the dosage employed, observers are about equally divided, one-half using 5 grains or less to begin with, the other half using doses of 8 to 10 grains. The drug appears thus to have a notable freedom from injurious action. Doubtless, if used injudiciously, it would, like antipyrin or antifebrin, although possibly to a smaller degree, produce similar untoward effects. (Report of Therapeutic Committee of British Medical Association, British Medical Journal, January 13, 1894, p. 90.)

[See also "An Inquiry into the Ill-effects of Antipyrin, Antifebrin and Phenacetin" at p. 133 of this volume of the *Retrospect.*]

PYRIDINE.

Dr. Blanc presents a careful study of this singular alkaloid. Possessing the formula C_5H_5N, it is a colourless, very fluid substance, of an excessively penetrating odour. Soluble in water and in alcohol in all proportions, it also yields crystalline salts which are, as well, soluble in these liquids. If inhaled in small doses it produces slight somnolence, headache, with congestion of the face and sometimes a little vertigo. The inspiration acquires a remarkable amplitude, the blood pressure diminishes, and there is a general vasodilatation. The excito-motor power of the medulla and spinal cord is profoundly changed, in that their excitability is calmed. The bronchial secretion is somewhat increased. Its absorption by the air-passages is rapid, and its elimination by the urine almost equally so, for it is complete within fifteen minutes ; it is also eliminated by the lungs, the glandular apparatus of the digestive tract, increasing the gastric secretion, and thus exciting the appetite and favouring digestion. This rapid elimination permits the use of enormous doses with perfect safety. It has also some antiseptic properties, and since it is not irritant, it can be used, as has been shown by Jullien, in from one to ten per cent. solution, in the treatment of urethral blennorrhœas in the male and female. Its most important use, however, is for the treatment of asthma and emphysema. Adopting the theory of Sée, that the former is a neurosis whose seat is in the medulla, in a state of excitability, reflex from very diverse peripheral irritation—pneumogastric, trifacial, even olfactory—and acting upon the motor nerves of the inspiratory muscles, particularly the diaphragm. Under the influence of this drug the respiration becomes free, the expectoration more fluid, and loses its purulence and foulness.

Auscultation determines that the sibilant râles disappear and are replaced by the mucous ones. Even in cardiac asthma the remedy is preferable to morphine, although for continued relief the treatment must be based upon iodide of potassium. It is useful in angina pectoris, because its vaso-dilating effect extends to the coronary arteries, and it should be used by inhalation for fifteen minutes each morning and night. Daudier has reported benefit from its inhalation in subacute traumatic tetanus. Although it is best used by inhalation for twenty minutes from a napkin upon which is poured several drops, it can be administered by the mouth in capsules. If used for urethritis, a tampon moistened in a one to ten per cent. aqueous solution can be applied to the meatus, or an injection of the same strength can be administered.—*Revue de Thérapeutique Médico-chirurgicale*, 1894, No. 1, p. 20.

[Professor Wilcox, who makes the above abstract of Blanc's paper says :—"Although we have used this remedy with brilliant success in several cases in which the symptom of asthma demanded immediate relief, we have never been able to induce a patient to inhale it for a second attack because of its abominable, penetrating, and lasting odour."]

(The American Journal of the Medical Sciences, March, 1894, p. 313.)

STRONTIUM BROMIDE.

Strontium bromide is one of the newer drugs that has held its place. I have used it constantly for nearly two years, and find it to deserve the encomiums of the French observers who reintroduced it into medicine. In a few instances in which I failed to specify the imported salt, patients complained that the medicine produced nausea and gastric pain. On dispensing the pure drug from a quantity obtained by myself from the manufacturers' agents, the complaint was not repeated. It is necessary, therefore, to specify a preparation known to be pure ; and, after using a number of brands, I have returned to that made in Paris, and with which the experiments of Paul, Sée, and others, and my own first observations were conducted. I usually give the drug in solution according to the following formula, known in the House Pharmacopeia of the Philadelphia Polyclinic as *mistura strontii bromidi composita:*—Strontium bromide, pure, $1\frac{1}{2}$ ounces ; glycerine, 2 fluid ounces ; infusion of gentian, 10 fluid ounces. Dose—From two to four fluid drams (15 to 30 grains of strontium bromide) before meals. Strontium, one of the chemic group termed "alkaline earths," appears to have a special action upon the gastric mucous membrane. It increases appetite, promotes digestion, and favours nutrition. It is a distinct sedative in the case of irritability of the stomach.

In cases of chronic gastric catarrh, with a tendency to vomiting, in the nausea and vomiting of alcoholism, and in the indigestion of pulmonary tuberculosis, strontium has been more than ordinarily useful. In gastro-duodenal catarrh, and in intestinal indigestion of painful type, I have given it with some pancreatic preparation one and a half or two hours after meals. Thus—Liquor pancreaticus, 2 fluid drams; strontium bromide, 15 grains; water, 2 fluid drams. I have likewise employed it with great benefit as an alkaline medicament in the treatment of lithemia. Its sedative effect as a bromide was especially marked in one case of lithemic dyspepsia associated with glycosuria, in which persistent insomnia had led to a distressing sulfonal-habit. By using it in doses of 30 grains during the day, and giving one or two doses of 60 grains at night, with occasional additional resort to hyoscin hydrobromate, the sulfonal-habit was broken up; and as general improvement took place the insomnia disappeared, and the doses of strontium bromide were reduced. As a bromide, when the drug is to be employed for prolonged periods and in full dosage, the strontium salt is to be preferred in most cases to the potassium or the sodium salt, as it interferes less with nutrition. (Dr. Solomon Solis-Cohen, Medical News, August 26, 1893, p. 239.)

THYROID SECRETIONS.—Its Action.

Whatever other functions may be subserved by the thyroid in the animal economy, whether in blood formation, proteid metabolism, or as supplementing the action of other organs, we cannot now doubt that all its more important functions are due to a secretion, which can be separated, though not as yet in a pure state. This is abundantly shown by the fact that the symptoms and deleterious results of atrophy, congenital deficiency, or removal can be averted or cured by a substance chemically separated, and introduced by the stomach. This fact. if it threw no other light on the physiology of the thyroid, serves to abolish all the theories grounded on the view that it acts by the removal of a poisonous substance from the blood, or by transforming mucin into "colloid" within the gland. True, it does not prove that no such action is exerted by the substance within the blood or tissues, but it minimises the previous observations as to the accumulation of mucin, &c., in the blood as explaining any part of the pathology of myxœdema. And if, as seems probable, the essential constituent of the secretion should prove to be of the nature of a ferment, the usefulness of the colloid material will also be negatived. I have recently made numerous observations on the nature of the substances contained in thyroid extracts. But since others more competent are engaged in the work, I need only refer to such

papers as that of Mr. E. White, "The Pharmacy of the Thyroid Gland," Pharmaceutical Journal, September 2, 1893. No one can, after such observations, question that the amount of the active ingredient forms a very minute proportion of the extract from the gland. The physiological action of the secretion on healthy animals, and to various diseases, also urgently demands further investigation. The observations on myxœdema can, of course, only be accepted with some deductions. Where only a moderate dose has been employed, the effects of restoration of the normal conditions as to temperature, skin excretion, action of the kidneys, restoration of the general nutrition, and of the cerebral functions, are well known. Valuable evidence is also given by the effects of overdoses, where the rise of temperature is beyond normal, the acceleration of the pulse and its characters, and the production of sweating, diarrhœa, &c., correspond with the phenomena of Graves's disease in many respects. A few observations are also recorded by medical men on themselves. Such are those of Dr. Alex. Haigh, who found that relaxation of the arterioles, diuresis, &c., were produced by it. The only satisfactory observation I have made on a healthy subject was one in which dried tabloids were given; the effect was slight irregular rise of temperature, tachycardia. It was noted that the tachycardia and ready excitability persisted for some days after the drug was stopped. The glycerine extract had proved inert in this and other cases. We cannot but be impressed by the fact that the partial arrest of the several functions in athyrea is removed by thyroid secretion, and may be exaggerated by an overdose. One is indeed inclined to think that the evidence in this respect is conclusive as to the physiological effects of the secretion. At the same time one cannot but see that there are flaws in the argument from a strictly scientific point of view, and that it does not serve as proof that a mere excess of the secretion is the sole and essential factor in Graves's disease. Nor does it seem to me that experiments on the healthy human subject can rightly be made to afford conclusive evidence. For in order to produce all the phenomena we must push the administration to a degree which would be dangerous, and which might lead to permanent damage to the nervous centres and to the heart. (Prof. Greenfield's Bradshaw Lecture, British Medical Journal, December 9, 1893, p. 1267.)

[See also Article by Dr. W. S. Greenfield, "On the Changes in the Thyroid Gland in Graves's Disease," at page 181 of this volume of the *Retrospect.*]

TRIONAL.

The use of trional as a hypnotic is extending, as reports are published of its value and freedom from toxic effects. Collatz

contributes some statistics to show its action in sleeplessness associated with mental disease. In simple uncomplicated cases of insomnia, a dose of fifteen grains was generally given, and found to induce sleep within an hour, which was undisturbed and lasted six to nine hours. Where there are active hallucinations, a more protracted administration is necessary, beginning at first perhaps with thirty grains, and afterwards continuing, a daily dose of fifteen grains. Such quantities may be taken for some time without apparent harm. There is said to be a freedom from ill-effects: the circulation and respiration remain unaltered, and the digestion affected. On two occasions nausea and vomiting occurred after the patient awoke, but the existence of dyspepsia may have had some influence. Diarrhœa came on in two patients suffering from paralysis in an advanced stage, and ceased on the discontinuance of the drug. No changes were observed in the urine. The usual dose of trional for most cases thirty grains, except where repeated use is desirable. Half this amount is then sufficient. It is best administered followed by a warm drink. The risk of toxic effects is very small, as instanced by an epileptic patient who took over two drachms with suicidal intent. Half an hour after swallowing the drug he had a fit, but soon recovered consciousness and complained of nausea, though he could not vomit. Shortly after this he fell into a deep sleep, lasting twelve hours, in which pulse and respiration were unchanged. He slept with the exception of short intervals during the succeeding day. In the evening there was some abdominal pain, and retention of urine requiring the catheter, the secretion, however, containing neither albumen nor sugar. Next day he was himself again. Collatz's conclusion is that trional is a useful hypnotic. It is not absolutely certain, but it is free from injurious effects, and suitable for prolonged administration.—*Berlin. klin. Wochensch.*, No. 40, 1893. (The Practitioner, December, 1893, p. 445.)

TUBERCULOSIS, CINNAMIC ACID IN.

The discoverer of the therapeutic value of cinnamic acid in tuberculosis, Professor Landerer, of Leipzig, has issued a small work in which he gives the methods of administering the drug, which he has found after two and a half years' employment in his clinic to give the best results. The treatment is neither complicated nor dangerous. The cinnamic acid used by him is prepared from storax. It is a perfectly colourless, coarsely crystalline powder. It is feebly soluble in cold water, but freely soluble in hot water, alcohol, and warm oil. It dissolves without colour. A cinnamic acid which is not absolutely colourless in hot water or alcohol forms a poor emulsion, because after a short time it deposits a gritty sediment. The emulsion employed by

Landerer is as follows:—℞. Acidi cinnamylici subtil. pulverisati, 5 gm.; olei amygdal, 10 gm.; vitelli ovi, num. 1; sol. natr. chlor. (0·7 per cent.) q. s.; ut fiat emulsio, 100 gm. The preparation of this emulsion is important. The acid should be ground fine in a mortar. A little almond oil is then added, and the trituration continued. The rest of the oil is then rubbed in, and the yolk of one egg added, and the whole mass thoroughly triturated. The ·7 per cent. sodium chloride solution is then added drop by drop, while the mixture is constantly stirred, until a weight of 100 grammes has been reached. The whole process should consume at least ten minutes. This mixture after standing a few days should remain homogeneous, and should deposit no crystals of cinnamic acid. If the emulsion does separate in the course of time it is still good. In the acid emulsion the crystals can still be seen under the microscope. They should not be larger than four times the diameter of a white blood-corpuscle. Larger fat drops should not be present. For alkalising the emulsion a 7·5 per cent. solution of sodium hydrate is used. About five drops of this are added to the cubic centimetre of emulsion. It is important that the emulsion be made alkaline. A slight excess of alkali does no harm. The microscope should reveal no crystals in the alkaline solution. The emulsion should be kept in a cool place, and a new lot prepared weekly, though it will keep two weeks or longer. It cannot be sterilised. The acid emulsion will keep for a long time, but the alkaline quickly spoils; it is best, therefore, to add the soda only to as much emulsion as is required at the time. The technique of the injection is simple. A perfectly sterile Pravaz syringe is necessary. The needle should be fine and very sharp. Before using it should lie fifteen minutes in alcohol, and then be washed with salt solution. An elastic band is placed about the upper arm as in venesection. The skin overlying the cephalic vein is cleansed with ether. The alkalinity of the emulsion should now be tested. The vein being made to stand out prominently, the needle should be introduced as nearly parallel to it as possible, till the lumen of the vessel is penetrated. When the needle has entered the vein it will be felt that it is freely movable in a cavity; and the emulsion can now be slowly injected. No pain, or nothing more than a slight burning sensation, which disappears on removing the band, follows the intravenous injection. If the fluid does not enter the vein a swelling will be observed. No symptoms should appear immediately after the injection. Depression is a sign of too large a dose. Allowance must, of course, be made for nervous persons. Injections into the gluteal muscles are made, the same as mercurial injections, into the upper and posterior gluteal region, avoiding the ischiadic nerve and gluteal

vessels. A very sharp needle is not necessary. In the very acute pulmonary tuberculosis of young people, Landerer has found that little is to be hoped for in the use of cinnamic acid. Cases of chronic tuberculosis without pulmonary cavities give almost an absolutely good prognosis. He has succeeded in improving 66⅔ per cent. of cases with pulmonary excavation when there was no considerable degree of fever. After the fifth or sixth injection the patient begins to have the subjective feeling of improvement. After the first few injections, many patients feel tired and depressed. This feeling should disappear at least by the third week. Sweating gradually diminishes, and the appetite improves. Expectoration gradually diminishes after the fifth or sixth week. When no cavities are present, the bacilli in the sputa begin to disappear by the fourth or sixth week. The size of the dose must be regulated by the strength of the patient. The weaker the patient, and the more extensive the disease in the lung, so much smaller should the dose be. Under any circumstance the treatment should be begun with small doses. The dose should never be rapidly increased. It is best to begin with less than 0·1 ccm., and slowly increase the dose up to 0·25 or 0·4 ccm. Especially strong patients may be given 0·8 or 0·9 ccm. In advanced cases the dose should be held at 0·1 or 0·15 ccm. If the patient complains of uneasiness, pain in the head or chest, the dose should be diminished. Landerer usually gives two injections weekly; but the best results are obtained when 0·1 or 0·2 ccm. are given every second day. This treatment should be continued in cases of pulmonary tuberculosis not less than three months, or at least a month after the bacilli have disappeared from the sputum. Very advanced cases have to be treated with small doses for nine months or longer. (Annals of Surgery, January, 1894, p. 105.)

[Many other varieties of tuberculosis are referred to in Dr. Warbasse's article, from which the above is taken.]

TYPHOID FEVER.—A New Sign of.

Dr. Filipovich, of Odessa, calls attention to a hitherto unmentioned sign which he has observed in all the cases of typhoid fever under his care during the last two severe epidemics of typhoid in Odessa. It consists in a peculiar callous appearance, of an orange or saffron yellow colour, upon all the prominent portions of the palms of the hands and plantar surface of the feet, taking the place of the rosy appearance of those parts in health or the bluish tinge seen in cyanotic patients. This condition is explained by the feeble heart-action, the incomplete filling of the capillaries and the dryness of the skin in typhoidal patients. In view of its constant and well-marked appearance in all the cases of typhoid under observation, Filipovich thinks

it may well serve as a diagnostic sign of typhoid fever, in the absence of other pathognomonic signs. Dr. Skibnevsky has also observed the constant appearance of this palmo-plantar sign during an epidemic in Moscow. The sign disappears rapidly on the establishment of convalescence. (Boston Medical and Surgical Journal, October 26, 1893, p. 429.)

WEIL'S DISEASE.

Freyhan (*Berl. Klinik*, February, 1894) discusses this subject after relating the following typical case. A man, aged 32, was suddenly seized with shivering, fever, headache, followed by semi-coma. On the next day jaundice was noticed. On admission the tongue was dry and coated, the temperature 38·9° C., and the pulse 100. The urine was dark in colour, contained bile pigment and a trace of albumen, some hyaline casts, and a few red and white cells. The liver and spleen were both enlarged. The stools were loose and passed unconsciously. The fever terminated by lysis in a few days, the other symptoms disappearing at the same time. Severe pains in the calves were noted, especially at this time. Men, says the author, are more often attacked than women. Sometimes relapses occur, the former symptoms reappearing, but rarely in such a severe form. The pulse rate is usually high, but during convalescence it is infrequent, probably owing to the presence of bile constituents in the blood. Severe cerebral symptoms are rarely absent. Jaundice is the most constant symptom. The hepatic enlargement is not always present, the spleen being more often affected. The nephritis is to be looked upon as toxic in nature as in the other infective processes. Muscular pains, supposed to be due to a myositis, are almost always present. The prognosis is good. Neither morbid anatomy nor bacteriology has as yet given definite information as to the exact nature of the disease. It may be difficult to distinguish it from enteric fever in the first few days, and it has been looked upon as abortive enteric fever with jaundice, but the typical lesions of this latter disease have never been found. The resemblance to acute yellow atrophy is quite superficial, and it differs from septicæmia in several ways. From infective jaundice the difficulties of diagnosis may be great. The author then refers to the infective theory of simple jaundice with special reference to epidemics, but he does not believe that a single cause can account for all such cases. Those believing exclusively in the infective origin of jaundice look upon Wiel's disease as only a severe form of this affection. The clinical picture of catarrhal jaundice, even when accompanied by fever, is very different from that of Weil's disease. The relation of Weil's disease to typhus biliosus, endemic in Egypt, is then discussed. Some

have looked upon it as the sporadic form of this disease. Only the discovery of the specific agent will settle the question. (Epitome of the British Medical Journal, February 24, 1894, p. 29.)

AFFECTIONS OF THE NERVOUS SYSTEM.

ALCOHOLIC NEURITIS.—Amenorrhœa in.

Several years ago I drew attention to the fact that in female patients affected with alcoholic neuritis the catamenia are almost invariably suppressed during the many months of illness which are usually involved. This seemed to me to be an interesting circumstance when taken in conjunction with the well-known complete, or almost complete immunity of the functions of the bladder and rectum observed in this disease; but it is also, as I have said, of considerable practical importance. I have reason to believe that the circumstance has not infrequently led to erroneous diagnosis. A female patient has become gradually paralysed in her extremities concomitantly with suppression of the menstrual flow—attributed perhaps to cold or moral shock—and the disease has been thought to be a result of this suppression. Now, from what we know of the pathological condition, it is quite incredible that such a cause could produce multiple neuritis. The fact, of which I have thoroughly convinced myself, of suppression of the menses being one of the most constant symptoms of alcoholic paralysis disposes at once of this misconception. The amenorrhœa is an associated symptom, not a cause. The remembrance of this may occasionally prove to be useful, too, in directing the attention of the practitioner to the possible occurrence of secret drinking in the case of a patient with a suppression of the catamenia which does not meet with ready explanation. In my experience this symptom is not found to occur in cases of multiple neuritis due to other causes. (Dr. Buzzard, The Lancet, November 18, 1893, p. 1234.)

CEREBELLAR DISEASE.—Optic Neuritis, Blindness, Deafness and the Knee-jerk in.

At the American Neurological Association on July 25, 1893, Dr. F. X. Dercum, of Philadelphia, read a paper with this title. He thought many of the symptoms of cerebellar disease were both inconstant and variable. They are difficult of explanation and frequently impossible to correlate. He desired to call attention more especially to the optic neuritis, the blindness, the deafness and the modification of the knee-jerks. He related the history of seven cases in which the above symptoms were present. It is a matter of common experience that very high

grades of neuritis may exist without marked impairment of vision. It would seem, therefore, that the added symptom of blindness gives a special significance to the optic neuritis found in these cases. It would appear that for some reason if we have optic neuritis at all in cerebellar disease, that it is apt to be intense in character, and further that it is likely to be associated sooner or later with total blindness. The proximity of the quadrigeminal bodies has naturally suggested itself as in some way explaining this blindness. The ataxia and titubation present in these cases refer us at once to disease of the vermiform process. A consideration of anatomy, as well as the autopsy of the Case 3, will show that if a growth be situated in the vermiform process, especially anteriorly, and that if this growth continues, to enlarge, it will sooner or later press upon the superior cerebellar peduncles and very probably upon the quadrigeminal bodies themselves. When we recall the relation of the fibres of the optic tract to the primary optic centres, we can readily understand how if pressure or irritation occur at this point a neuritis should be a consequence. Further, the irritation being direct, we can, perhaps, understand why the neuritis should be of a high grade, and, finally, also why this neuritis should be associated sooner or later with total blindness. With regard to the deafness which is present in some cases of cerebellar tumour, and which was absolute in Case 3, it may perhaps be explained in a similar manner. The studies of Spitzka, Monakow and others have made it extremely probable that the posterior quadrigeminal bodies stand in the same relation to the auditory fibres as do the anterior to the optic fibres. It would simply be necessary, therefore, to our explanation that the pressure involve these structures, in order that deafness should be a symptom. When we turn our attention to the knee-jerk, we meet with a problem of peculiar difficulty. It would seem, that one would be justified in accounting for the loss of knee-jerk when observed in disease of the cerebellum by the loss of muscle tonus. It is extremely probable that lesions of the cerebellum act as do lesions elsewhere, in one or two ways, that is, either by destroying tissue and thus destroying function, or by acting as irritants. It is perhaps in this way that we can account for the fact that in some cases of cerebellar disease the knee-jerk is absent, and in others present or exaggerated. (Boston Medical and Surgical Journal, October 26, 1893, p. 422.)

CEREBRAL SURGERY.

At the International Medical Congress (Rome, 1894), in the Section of Surgery, Dr. Lucas-Championnière said:—"My experience in cranial surgery now extends back over exactly twenty years, the date of my first successful case having been

1874. During these two decades I have operated upon 64 cases. Of these 10 fall under the head of recent injury, and the remaining 54 were operated upon for cerebral disease, either without injury to the skull or succeeding upon such injury. The method that I have employed during many years in opening the skull-cap is simple, and I consider gives the minimum of nervous exhaustion possible. The opening is first made with the crown of the trephine and then enlarged in any desired direction by straight or curved pliers. I know no other way in which the correct dimensions in all directions can be obtained so quickly and satisfactorily, or which seems to yield better conditions for healing. My 10 cases of operation for direct injury have given me most satisfactory results, only 3 deaths having occurred where the patients operated upon were in a desperate condition. I have also been enabled to save the lives of patients whose state appeared to be just as desperate, and one of these was living nineteen years after the operation. My 54 cases of operations where the condition had not followed upon direct injury have demonstrated to me in a yet more striking fashion the benefits that may accrue from trephining. It is true that I have had to reckon with 7 cases of death, but I would remark that in the only two cases where the period of survival was very short the cerebral lesions were very gross. In cases of coarse cerebral lesion the operation is also additionally grave because of the shock to which the patient is submitted. The reasons for operation in these 54 cases should be subdivided as follows :—For true epilepsy, 14; for Jacksonian epilepsy, 12; for cerebral symptoms, such as vertigo, headache, and buzzing in the head, 6; for different palsies, 22. The operations for true epilepsy have given me good results. I have been able in some cases to follow cures apparently sufficiently pronounced over a long time; in one case over two years. In 12 cases out of 14 I have observed amelioration in different degrees, and in more than half the cases to a very satisfactory extent. In two cases only have I had no apparent result, and in one of these there was a short period of epileptic insanity following the operation. These cases of traumatic epilepsy have given me three very good cures and three somewhat mediocre results, but no deaths. With regard to the cases where trephining had been undertaken for the relief of symptoms, pain is the first symptom indicating an operation. The symptom of vertigo has also given me good results when trephining has been large in extent and repeated. Among other lesions where the operation has done good I should mention a case of limited cerebral hemorrhage, a case of osseous tumour of syphilitic origin, and, above all, certain cases of diffuse peri-encephalitis of traumatic origin. These last cases are particularly interesting,

for the symptoms which follow upon certain cerebral traumatisms are in every way so similar to those of general paralysis. In these cases operative intervention may arrest the ill and if undertaken in good time may definitely heal the patient. They demand a very large trephining. I have made openings of seven centimetres by eight centimetres, with an opening equally large in the dura mater, and have incised on the surface of the brain, and with these cases I have always had a good result. This fact naturally gives rise to the idea that certain forms at least of general paralysis are destined to fall into the domain of surgery."

Prof. Macewen, after making a short communication on the subject of cerebro-spinal surgery generally, formulated his conclusions as follows:—(1) That all abscesses of the brain are formed subsequently to a primary focus of infective disease situated elsewhere; (2) that the chief infective foci are formed in connection with middle-ear disease; (3) that abscesses of the brain originating in middle-ear disease are generally in direct contact with the primary source of infection; (4) that such abscesses are generally best reached in the first place through the mastoid antrum; (5) that the mastoid antrum is most easily opened through the supra-meatal triangle, from which the whole tegmen antri and tegmen tympani may be exposed; (6) it is necessary to remove the whole infective tract; and (7) after this has been done the skull is trephined over the temporo-sphenoidal lobe of the brain. (The Lancet, April 7, 1894, p. 887.)

CEREBRAL TUMOUR.—Drugs in.

It is admitted on all sides that there is no single kind of cerebral tumour which is in the least degree curable by drugs, except perhaps a gumma or tuberculous nodules. I have elsewhere made the statement that cerebral gummata are not really cured by drugs, a statement which has been much disputed by many authorities. No one, however, has disproved it by post-mortem records, and to support it I have definite facts showing the constant recurrence of symptoms in these cases; while finally, my proposition is strongly supported by no less an authority than that of Dr. Gowers. Further, while speaking of antispecific treatment, I wish to allude for one moment to the well-known fact that, for some reason or another as yet unexplained, the use of iodide of potassium in large doses will cause a moderate abatement of the symptoms in cases of ordinary tumours, even of glioma; but it is most important to note that this abatement is only moderate, and is not to be compared for a moment with the striking, if temporary, effect which is produced on a syphilitic lesion by the same drug.

I mention this point because such partial improvement has undoubtedly led to errors in diagnosis, and cases have been for months regarded as specific when, as a matter of fact, they were instances of fatal gliomata. Improvement under iodide of potassium, if only moderate, therefore is no index of the nature of the case. As regards tuberculous nodules, everyone must have seen more than one case in which all the symptoms of tuberculous tumour were present, including the classical symptoms, but in which total remission of the same occurred, and the patient ultimately survived, unfortunately as a rule blind, and such tuberculous nodules have been found at post-mortem examinations densely fibrous and with caseated centres. Clearly, therefore, in the case of tuberculous disease, treatment by arsenic, cod liver oil, &c., is justifiable for a certain time, the duration of which may be longer than in the instance of iodide of potassium ; four months, for instance, as against two. (Mr. Horsley, British Medical Journal, December 23, 1893, p. 1365.)

DISSEMINATED SCLEROSIS AND TABES DORSALIS.—Atrophy of the Disc in.

There is one fact which especially strikes one in contrasting the atrophy in the two diseases, disseminated sclerosis and tabes. The atrophy and associated visual disorder is usually a far less grave condition in disseminated sclerosis than in tabes. In the latter disease the lesion is nearly always progressive, and rapidly leads to absolute or nearly absolute blindness. The disc in disseminated sclerosis may acquire a pearly whiteness, but this, I think, only exceptionally involves the nasal as well as the temporal district. This, however, may be an affair of time. I have never found it assuming the look of that which is so often met with in tabes—flat, dense, and uniform, of a cold bluish-grey tone, suggesting the idea of its being painted in opaque oil colour, with a very few retinal vessels lying upon it, and a marked absence of any minute vascularity. It is an interesting and widely observed fact that when atrophy of the optic nerve is of early occurrence in tabes, ataxy either does not occur or is but feebly expressed. Out of the 15 cases of tabetic atrophy amongst private patients, only 4 presented characteristic ataxy, and in certainly 3 of these other symptoms of tabes, notably pains, had preceded the eye changes for several years. So striking is the frequency of immunity from ataxy observed in those who are early blind from tabetic atrophy that some Continental observers speak of the atrophy as though it had an actual beneficial effect upon the course of the disease ! It has been customary for some time past to test the knee-jerks in a patient suffering from atrophy of the optic nerve apparently of spinal character, with the expectation that they will prove to

be absent. If the case be one of tabes, they will in all probability fail to be elicited. And if, along with this, there be a history of pains, and the pupil does not respond to light, whilst possibly contracting during an effort at accommodation, a diagnosis of tabes may be confidently given. The far greater probability of the presence of disseminated sclerosis will henceforth require to be remembered, and search conducted for confirmatory evidence. Amblyopia and optic atrophy have long been recognised among the symptoms of disseminated sclerosis, but their frequency has not been appreciated. Is not this due to the fact that a very large proportion of cases of disseminated sclerosis are diagnosed as cases of hysteria? The visual disorder, consisting as it so commonly does of a concentric limitation of the field, has the effect of appearing to confirm this erroneous diagnosis. I cannot help thinking that the visual troubles so often supposed to mark a case conclusively as one of hysteria are really very often dependent upon an organic cause. There may or may not be atrophy, or this may be so slight as to escape detection where it is not carefully looked for, but the condition is dependent upon an organic change in the course of disseminated sclerosis. Are not many of the cases of the retro-bulbar neuritis of ophthalmologists really examples of the "hysterical" form of disseminated sclerosis, the type in which, in its early stages, the characteristic symptoms are either entirely absent or but very feebly expressed? (Dr. Buzzard, British Medical Journal, October 7, 1893, p. 783.)

DISSEMINATED SCLEROSIS.—The Hysterical Form.

In this form of disseminated sclerosis the characteristic symptoms are usually but slightly marked, even though many years may have passed since the patient first complained of illness. Long continued intervals of apparent recovery are common. Loss of power in one or other of the lower extremities almost always figures in the history, and sometimes this is the only symptom. After an interval of exemption a recurrence of this has taken place immediately after a severe moral shock, and it is doubtless to this circumstance, coupled with the tendency in these cases to emotional manifestations, that the frequency of errors in diagnosis is due. A female patient, aged 45, when walking uphill five years ago, found that the toes of both feet dragged. This passed off next day, but she occasionally reeled a little in walking. Three years ago, on the death of her grandmother, she became weak and walked with difficulty. The power subsequently varied, but two years ago, on the death of her mother, she became much worse. In hospital we found

diplopia, slight nystagmus, discs very pale and edges clearly cut, inner edge of disc of a dead-white colour. She had slight tremor of the arm on voluntary movement. In this case the ordinary symptoms of disseminated sclerosis were but feebly expressed. There was no spasticity of limbs, and no ankle clonus. The knee-jerks were well marked. The ophthalmic symptoms, however, gave conclusive evidence. In another female patient there was a history of a fainting attack, following the discovery of a compromising letter, and a condition of nervous dread, from which she recovered. Two years later she was attacked with vomiting, and cramp in the sciatic districts, refused food, and was said to be dying. She suddenly recovered in twenty-four hours, and was completely well in six months. Two years later she had loss of power in both legs, and diplopia. Recovered in three months. Three years later more vomiting and loss of power, which again subsided, and she remained well till four years afterwards. Then, on the death of her husband, loss of vision and vomiting, and paralysis of right arm slowly developed. We found definite limitation of field of vision, and well-marked atrophy of both discs. Vision with the right eye was $\frac{6}{60}$, with the left $\frac{6}{36}$, Jäger 10 with each. There was no distinct tremor of limbs, but the knee-jerks were exaggerated, and there was ankle clonus. Not long before her admission to Queen Square Hospital she had been declared by a high authority to be free from organic disease. In every case of "hysterical" type (hospital and private), with one exception, some ophthalmic symptom, and often more than one (optic pallor, diplopia, or nystagmus), was either present or formed part of the history. As regards the disc, whilst there was change of atrophic character in 37·5 per cent. of the typical cases of disseminated sclerosis, a similar change was noted in 46·6 per cent. of the "hysterical" type. (Dr. Buzzard, British Medical Journal, October 7, 1893, p. 780-781.)

EPILEPSY OF CARDIAC ORIGIN.

Rosin (*Wiener medicin. Presse*, 1893, No. 43, p. 1677) reports a case of myocardial degeneration of arterio-sclerotic origin, in the course of which epileptiform convulsions appeared. He also refers to eleven cases of similar kind that he succeeded in collecting from the literature. In the case in question, a woman, who had previously enjoyed perfect health and was free from hereditary neuropathic predisposition and a history of alcoholism or syphilis, at the age of forty-nine years began to have attacks of tachycardia, without recognisable cardiac lesion. The paroxysms at first recurred every six or eight weeks, setting in suddenly and terminating as abruptly, and lasting for several hours. During the attack the face became pallid, and an

abundance of limpid, almost colourless urine was passed. Subjectively there was a sense of cardiac tumult, together with a feeling of oppression and general distress. In the course of time the attacks increased in frequency, finally occurring once a week, usually toward night, and lasting for three or four hours. After the lapse of some six years the attacks became still more frequent, and permanent arrhythmia manifested itself, with increase in the area of cardiac percussion dulness, an accentuation of the second aortic sound, and tortuosity and resistance of the peripheral vessels. It was now that the diagnosis of myocardial degeneration of arterio-sclerotic origin was ventured. Exertion was attended with shortness of breath and anginal symptoms. In the third year of this train of symptoms the woman was seized during sleep at night with an attack indistinguishable from an epileptic paroxysm, attended with incontinence of urine and followed by sopor and dulness. In the following ten years, up to the time of death, there occurred seven additional attacks of the same kind, all at night, in the midst of profound sleep. The last attack, the eighth, was the immediate cause of death. For the last five years of life five or six larval attacks occurred annually, preceded by an aura referred to the præcordium or epigastrium, and consisting in transitory nausea associated with great pallor and hallucinations. From a study of the case reported, and of the collected cases, it is concluded that disease of the heart and great vessels may constitute a cause of epileptic attacks. Such an etiology may be accepted in a given case if all other causes have been excluded. This variety of epilepsy may attend any form of cardiac disease, although myocardial degeneration and arterio-sclerosis are particularly prone to be active in this direction. The resulting condition depends upon a nutritive disturbance of the brain, in consequence of circulatory derangement, particularly in the motor area. There may, besides, be degenerative changes in the cerebral vessels. A special individual predisposition appears to be necessary for the development of this complication, as it is rather uncommon in connection with disease of the heart. Sleep seems to favour the occurrence of the paroxysms. Therapeutically, the remedies indicated are digitalis upon the one hand, and bromides upon the other. (The American Journal of the Medical Sciences, February, 1894, p. 199.)

EPILEPSY.—Treatment with Large Doses of Bromides.

M. Charles Féré has had a large experience in the treatment of epilepsy, and has kept careful records of his cases and the results of his medication. Of the cases that on the whole succeed best, the majority are those in which the fits are checked by

doses of about a drachm of bromide *per diem*; and it has been comparatively rare of late years to use more than twice that dose. M. Féré, however, has often given doses of from four to six drachms *per diem* for long periods; and he details the results of 20 such cases taken at random from a large number, all of whom have been under observation from two to six years. The points that have been specially noted are the number of greater and lesser attacks per month (*accès vertiges*), the weight of the patient, and the symptoms of bromism, dyspepsia, acne, &c. The subjects have all been young men, of an average age of 28 on their admission to the Salpêtrière, none of them older than 37. The condition of all but two has improved more or less since their admission. The treatment has not been exactly uniform, and the accurate results can only be seen from a long series of tables lasting over two to six years for each case, but a rough summary shows several points of interest. The usual plan has been to begin with a dose of one drachm of bromide of potassium *per diem*, and to increase it gradually by half a drachm, or one drachm, in each year, until it reaches four drachms of the potassium salt, or five drachms of the bromide of strontium. No other bromides have been used. In 18 out of the 20 cases some good has been done, but in 7 of these the best condition has been reached when the doses have reached two or three drachms of bromide of potassium; and there has been some retrogression when they have been increased, though on the whole, less retrogression when five drachms of the strontium compound have been used instead of four drachms of potassium. In eleven cases, however, the improvement has gone on with the increase of the dose, and in five cases the frequency of the attacks has gone down from more than one in a week to less than one in a month. There is one case in which there has been considerable loss of weight—about a stone and a half in a year, without any marked bromism, under doses of four drachms of bromide of potassium, and without any improvement by substitution of strontium for potassium, or by injections of Brown-Séquard's fluid. In nine other cases there has been trifling loss of weight; in six others some gain; in four others no noticeable change. M. Féré concludes that the use of increasing doses of potassium bromide up to four drachms is worth trying when the cases can be watched, and can do little harm. For the bromide eruptions he advises arsenic, naphthol, and bismuth salicylate. Conditions of depression and dyspepsia require speedy treatment: the drug should be given up entirely for a time, and eliminated with the help of purgatives and injections of small quantities of pilocarpine.—*Rev. de Méd.*, vol. i., p. 177-198, 1893. (The Practitioner, October, 1893, p. 293.)

FALSE DISSEMINATED SCLEROSIS DUE TO MEASLES.

At the Royal Medical and Chirurgical Society, on November 28, 1893, Dr. Dawson Williams gave particulars of a case of false disseminated sclerosis due to measles, with remarks on the occurrence of certain widespread nervous disorders after this and other infectious diseases. The patient was a girl aged three years and eight months, who on the fourth day of an ordinary attack of measles was seized with convulsions, after which she remained "unconscious" for ten days. When admitted into hospital about four weeks after the convulsions she was in an apathetic condition, had some difficulty in swallowing, did not speak, and was unable to sit up. Though she could move her limbs feebly, she was not able to feed herself or to stand. Very slowly she improved, so that at the end of three months she was able to speak a little, to feed herself, to stand up, and to walk with assistance. The movements of the upper limbs were uncertain, owing to coarse tremor and incoördination. The knee-jerks were "easily got." There was no ankle-clonus. When she was six years old her speech was peculiar, slow, deliberate, and syllabic; she was backward, though not so deficient in intellect as appeared to be indicated by the vacant expression of her face. There was at this time tremor of the hands, aggravated by attention. Two years later her condition had improved. Speech was still very deliberate, but she answered questions intelligently. She could walk several miles, but the gait was of the spastic type, the legs were adducted, and owing to some rigidity and imperfect flexion of the knees the toes were liable to catch against any small obstacle and give her many falls. Slight coarse tremor affected the limbs during voluntary movements; she drank without difficulty, but swallowed in noisy gulps. The knee-jerks were very free, and front tap contraction was easily elicited. At a later stage ankle-clonus of short duration could be obtained. When ten years old she was still very backward at school. Tremor, aggravated by attention, was present in all the limbs and involved the head; it interfered with the performance of any fine movement of the hands. She could walk six miles, but her gait had the same character as before. Nystagmus was not observed at any period. Reference was made to recorded cases of widespread affections of the nervous system occurring in association with measles, and the opinion was expressed that if hemiplegia and atrophic muscular paralysis be excluded the cases might be classified as follows: (*a*) acute disseminated myelitis; (*b*) cases presenting at a later date symptoms resembling disseminated sclerosis ("false disseminated sclerosis"); (*c*) cases in which, with some symptoms similar to those of the preceding group, the most

prominent symptom was incoördination; (*d*) cases of "extensive, ascending, diffuse, or disseminated" paralysis, resembling diphtherial paralysis. A consideration of published cases of nervous disorder occurring in association with scarlet fever, small-pox, typhoid fever, whooping-cough, influenza, and mumps led to the suggestion that they might be classified on the same system, though all the terms of the series had not been observed in connection with all of these diseases. It was pointed out that "false disseminated sclerosis" had been observed after diphtheria. In acute disseminated myelitis, complicating variola (Westphal) and measles (Barlow), the changes in the cord were primarily vascular, and it was thought that the clinical evidence lent support to Westphal's suggestion that a slighter degree of mischief might give rise to changes which eventually produced the condition which had been described as "false disseminated sclerosis." It was suggested that certain cases, in which temporary incoördination of the lower limbs developed after acute infectious disease, might probably be due to the same pathological condition in a still milder form. (The Lancet, December 2, 1893, p. 1385.)

HYSTERIA.—Disturbances of Vision in.

Drs. J. K. Mitchell and G. E. De Schweinitz append the following conclusions to an important study of this subject :— (1) Achromatopsia, or loss of colour sense, is not present in the American cases (certainly not as it has been described by Galezowski and other French observers); (2) reversal in the normal sequence of the colours, so that red is the largest field, is usually present when there is anæthesia, but that disturbance of the colour-sense and anæthesia do not necessarily belong to each other is proven by the fact that we have examined at least two cases of universal anæthesia with no alteration of the visual fields, and a third case in which, although there was most marked contraction, reversal was not demonstrated; (3) the green field is, relatively at least, more and more often contracted than the others; (4) in the difficult distinction between certain types of neurasthenic and hysteric patients, the presence of disturbance in the colour-sense is of diagnostic import; it is less apt to be present in the former than in the latter, and yet its absence is of little meaning, as we have not found it in many typical cases of hysteria, and have found it in others which are properly classified in the neurasthenic category; (5) it is possible that in the rare cases of hysterical one-sided or general hyperæsthesia it will be found that colours are more acutely appreciated than is normal, and that the colour fields are correspondingly enlarged, although we can make this only as a suggestion, having received a hint of it in one case, but not

having found it in others; (6) the violence of the hysterical manifestations bears no relation to the disturbance of colour-sense, the most marked change being found in patients the least affected nervously, and practically normal visual fields where the general symptoms of hysteria, anæsthesia excepted, are of the highest grade; (7) some of the following changes, so far as the field of vision is concerned, are likely to be present in cases of hysteria:—(*a*) simple contraction of the colour fields, with unaffected form fields. (*b*) Contraction of both form and colour fields, the green field being relatively more contracted than the others. (*c*) Partial or complete reversal of the normal sequence in which the colours are appreciated, most commonly that variety in which the red field is greatest in extent. Under these circumstances the colour fields may be normal in extent, sometimes even wider than is normal, or there may be an associated contraction of all the colour fields. (*d*) Unusual obscurations of portions of the visual field, for example, in the form of a hemianopsia, or greater contraction of the fields on one side than on the other, the greater contraction usually being found on the same side with the anæsthesia. (The Journal of Nervous and Mental Disease, January, 1894, p. 48.)

INFANTILE PALSY.—Electrical Treatment.

It is important in every case of infantile paralysis which has lasted over four weeks to try electrical treatment, continuing it for six months or a year. It is the exception for a muscle to be so completely destroyed by poliomyelitis as to have no functional fibres left, and great development of these remaining fibres may be gained by persevering stimulation of them. Where the electrical reactions are reduced to the very lowest flicker, or even entirely abolished, some improvement may be hoped for. Where the electrical reactions are not altered in quality, it is not good practice to leave the case to take care of itself. Electricity acts only as a stimulating treatment, but it is superior to any mechanical stimulation by rubbing or massage. It may advantageously be combined with these. The form of electrical stimulation to be employed is less important than the need for perseverance. The induction coil with or without the bath is quite easily arranged for use by the mother or nurse of the patient. (Dr. Lewis Jones, p. 194. Medical Press and Circular, March 21, 1894, p. 303.)

MIGRAINE.—Treatment by Ergot.

In the treatment of migraine with ergot it has been my practice to administer the fluid extract of ergot combined with an equal quantity of cinchona elixir, to obviate its tendency to cause

nausea. Two teaspoonfuls of this mixture is to be taken in water as soon as the premonitory symptoms of the headache are noticed, and the patient is advised to lie down and keep very quiet. If after an hour the headache continues, a second similar dose is taken, and then a third in another hour, if necessary. As nausea is such a general accompaniment of this affection, it is provided that if either of the doses be vomited it should then be taken as an enema in two ounces of water. I have rarely failed to arrest the attacks with this medication, even in long-standing cases, and with a preventive course of intestinal antiseptics in the intervals the relief from the malady has often proved permanent. (Dr. W. H. Thomson, New York Medical Record, March 17, 1894, p. 335.)

MUSCULAR ATROPHY.—Non-spinal Idiopathic.

At the Clinical Society, on January 26, 1894, Dr. Penrose and Mr. Turner brought forward a man aged twenty-one as a typical instance of the non-spinal form of idiopathic muscular atrophy. The patient was born in America, had lived there till the age of sixteen, and had wandered about in caravans. There was no family history of nerve trouble. When aged twelve he had a short illness, and during the next three years he was much exposed to wet. When nearly seventeen he first complained of weakness of the back; later this extended to the arms, and two years afterwards to the legs. His condition had remained stationary for the last three years. The wasted muscles showed no reaction of degeneration and gave but slight response to galvanism or faradaism. The infra-spinatus and the muscles of the flexor group of the forearm were larger than natural. There was no change in sensation and no ankle-clonus.

Dr. James Taylor said that the case was of interest in that three nervous conditions were present—viz., pseudo-hypertrophic muscular paralysis, idiopathic muscular atrophy, and the condition known in France as the Landouzy-Dejérine disease, the facio-scapulo-humeral type of muscular atrophy. Erb had shown that the whole of these affections were but varieties of muscular dystrophy.

Dr. Ormerod asked whether the lordosis was due to weakness of the muscles of the back or of the abdomen. The saddle-shaped back suggested a resemblance to the condition described by Duchenne as due to paralysis of the abdominal muscles. He agreed that the three diseases mentioned by Dr. Taylor were varieties of the same affection.

Dr. Penrose, in reply, said that he regarded the spinal curve as due to weakness of the muscles of the back. (The Lancet, February 3, 1894, p. 209.)

NEURITIS DUE TO ARSENIC USED IN THE TREATMENT OF CHOREA.

On September 15, 1893, a bright girl of eleven years of age was admitted into the Halifax Infirmary with well marked chorea. She had been ill for two weeks and was now unable to walk or feed herself. She was at once treated with ten-minim doses of liquor arsenicalis, B.P., three times a day. During the first week there was no change in her condition. The movements then began to get less and she continued to improve for a fortnight, during which time she had no sickness, diarrhœa, or other symptom of arsenical poisoning. At the end of this time she expressed herself as being much better, the choreic movements had almost ceased, she could feed herself and was permitted to get up. On October 8 she complained of pain and difficulty in swallowing, when the arsenic was discontinued. Two days later she said her legs were painful and felt numb, and on examination there was found some paresis of the legs, and the calves were tender, sensation was also impaired ; and the patellar reflex was absent on both sides. A day or two later the arms became affected in a similar manner, and gradually all the limbs became powerless, the muscles becoming flaccid and extremely wasted. She was now unable to turn in bed or to help herself in any way. The temperature ranged from 99° F. in the morning to 100° in the evening (on one occasion to 101°) and continued so for three weeks, when she gradually began to recover under the use of prepared food, cod-liver oil, tincture of nux vomica, massage, and faradaism. On January 12, 1894, the patient had so far improved that she could feed herself and sit up in a chair, but could not walk properly. The numbness had disappeared, and the muscles had regained much of their strength and tone. The interesting point about this case is—in view of the present much-advocated use of large doses of arsenic in the treatment of chorea—the possibility of the occurrence of peripheral neuritis without any of the cardinal symptoms of arsenical poisoning, though the case be closely watched in hospital. (Dr. John A. Adams, The Lancet, February 10, 1894, p. 332.)

OPTIC ATROPHY IN CHRONIC NERVOUS DISEASE.

In connection with the subject of optic atrophy, the ophthalmologist was mainly interested in the prognosis *quoad cœcitatem.* Did the changes met with necessarily indicate progression to complete blindness, or was there a possibility of the process becoming arrested after producing a certain amount of blindness or of recovery taking place? Two forms of atrophy were particularly interesting in this respect. The first was that

which was associated in the beginning with a central scotoma resembling closely that characteristic of toxic amblyopia, and occurring in patients over 40 as a rule. They differed, however, from toxic amblyopia in many ways; the defect was not similar, and did not begin simultaneously in both eyes, and symptoms of tabes (absence of knee-jerk, reflex pupillary immobility, &c.) could generally be made out at the same time. The scotoma did not become absolute, but after some time was followed by limitation of the field of vision, and eventually complete blindness from tabetic atrophy, of which condition it was no doubt a variety. Notwithstanding, therefore, the origin as a central scotoma, the coexistence of early tabetic symptoms forced one to give a bad prognosis. Another form of atrophy of the discs, liable at first to be confounded with toxic amblyopia, but which was neither recovered from nor followed by complete blindness was what has been called by Jensen "stationary scotomatous atrophy." These cases occurred in young people before the age of 35. The two eyes were not simultaneously affected. The scotoma came on rapidly and soon became absolute, so that the patients fixed eccentrically. The ophthalmoscopic appearances were those of atrophy, yet the prognosis was good. The cause was no doubt a retro-bulbar neuritis. As to toxic amblyopia, he did not consider that any valid evidence had yet been given that such cases were really cases of retro-bulbar neuritis. All the cases examined hitherto had been cases of more general poisoning with meningitis, &c., and because they exhibited the symptom amongst others of central scotoma it did not follow that the typical central scotoma, equally distributed over both eyes, which was met with in toxic amblyopia, had the same origin. (Dr. Berry, British Medical Journal, October 7, 1893, p. 783.)

OPTIC NEURITIS AFTER FEVERS.

In the *Journal of the American Medical Association* Dr. White gives a contribution on a subject of no little interest not only to ophthalmic surgeons but also to physicians—viz., the occurrence of optic nerve troubles after acute fevers, especially typhoid fever. Such conditions do occur apparently after different fevers, for neuritis has been recorded following measles and also scarlet fever, while its occurrence after typhoid fever and malaria seems to rest on equally firm evidence. Dr. White records three cases observed by himself. The first was that of a lady just convalescent from typhoid fever, who complained of inability to use the eyes. There was distinct swelling of the discs, and that the condition was neuritis was confirmed by an independent ophthalmologist. Six months later the condition had entirely cleared up. The second case was one of optic

atrophy occurring in a man aged 28 as a sequel to typhoid fever. His sight became gradually worse, in spite of improvement in his general health, and when first seen there was characteristic atrophy of the optic nerves. He was put on strychnia and continued to take increasing doses of it until he was taking as much as one-fifth of a grain (!) three times a day. Toxic symptoms were then produced, necessitating a reduction of dose, but his vision increased from $\frac{5}{200}$ in the right and $\frac{1\cdot2}{200}$ in the left eye to $\frac{20}{200}$ and $\frac{17}{200}$ respectively. The third case was one of what was supposed to be slight malarial fever. In this there was a certain amount of blurring in one eye and actual neuritis in the other, with considerable impairment of vision. The patient gradually regained her vision, and finally both nerves appeared to be quite normal. These cases are interesting, and they are very important. Considering the profound effect so frequently exerted by poisons—especially in connection with blood states—on the nervous system at various points, it is not surprising that the optic nerves should sometimes suffer. The importance of recognising any such condition and of adopting suitable treatment cannot, of course, be exaggerated. (The Lancet, November 25, 1893, p. 1324.)

PARALYSIS OF THE DIAPHRAGM.—Aphonia in. In the *British Medical Journal*, May 28, 1892, I published some notes upon paralysis of the diaphragm, and mentioned several cases. Since then I have met with three or four more cases. The most common cause of this paralysis is in my experience diphtheria, and in the cases I have met with only one recovered, and that was the case of a child. It is my opinion that the condition is frequently overlooked, and the patient allowed to walk about instead of being kept absolutely at rest, the two great causes of sudden death after diphtheria being cardiac paralysis and paralysis of the diaphragm. Aphonia is the most important symptom in the diagnosis of paralysis of the diaphragm. I was unable to use the laryngoscope in any of my cases on account of the distress caused by any attempt at its use. I have no doubt that paralysis of the diaphragm and the resulting insufficient filling of the lungs with air was the cause of the aphonia. Aphonia caused in any other way is not so quickly followed by death. Another symptom is discovered by means of palpation, the force of the descent of the diaphragm being estimated by the hand being placed in either hypochondrium. In testing this force I do not attract the patient's notice to his breathing. The third symptom is the enfeeblement of the breath-sounds, especially at the bases of the lungs, which may be followed by signs of congestion. The fourth symptom

is the sense of distress experienced by the patient; he feels that he cannot get his breath, although there is no stridor or wheezing. Paralysis of the diaphragm should at once be suspected in cases of recent aphonia after a sore throat. The condition is very fatal, and the only chance of saving the patient is an early recognition of the case and prompt and energetic treatment. Every patient who is known to have had diphtheria should be kept under observation, and on the first sign of implication of the nervous system should be ordered absolute rest. Perchloride of iron and strychnine should be freely given, and if the diaphragm is weak, blistering fluid should be applied over the course of the phrenic nerves in the neck. (Dr. C. W. Suckling, The Practitioner, March, 1894, p. 178.)

"PINS AND NEEDLES"—GOUTY NEURITIS.

"Prickly" or "pins and needles" sensations in various parts of the body, unaccompanied by any objective symptoms, were formerly wont to be referred to "congestion of the spinal cord." It is tolerably certain now, I think, that they are due to an early stage of polyneuritis. Examples of this affection frequently come before me. When the patient is a medical man they are especially apt to occasion great alarm, because, as is well known, a sensation of this kind, occurring in one limb, is often the precursor of an apoplectic seizure. A medical man had been overworked, and had suffered for several months from dyspepsia, pain after food, and flatulence. His urine was constantly loaded with urates, phosphates, and oxalates. The day after taking a hot-air bath he felt "pins and needles" in both feet and hands, and this was still present when I saw him two months afterwards. The sensation had not extended upwards, except that a fortnight after its commencement he complained of tingling in the tip of the tongue, which lasted for a month, and there had been at times a "prickly" feeling in the lips. The sensation in the hands was as though they had been dipped in snow and then exposed to a fire. It appeared that shortly before the commencement of the symptoms complained of he had lain out in a hammock, and the exposure had been followed by lumbago, sciatica, and pains in the shoulders. Examination showed no sign of disease of the viscera. The knee-jerks were normal. His diet was regulated, and I gave him remedies directed towards a gouty diathesis. In a fortnight he had distinctly improved, although the symptoms still continued and were increased by heat and cold, whilst exercise tired him inordinately. A month later his symptoms were disappearing, his digestion had improved, and his urine was always clear. A few weeks later he reported himself as being quite recovered. The character of the symptoms and the result

of treatment appeared to show that they were due to uric acid, and that the peripheral nerves were the seat of lesion. (The Lancet, November 18, 1893, p. 1234.)

SALICYLATE OF SODIUM AND BROMIDE OF POTASSIUM IN HEADACHE.

One very common form of headache commences in this way. The patient sometimes feels a little unwonted irritability at night, but this irritability is not always present. If it is so, it is very often the precursor of a headache. He awakes in the morning about four, five, or six, with a feeling of weight in the head, but not a headache. He is very drowsy, disinclined to rise, and is apt simply to turn over and go to sleep again almost at once. If he does this he awakes again about seven or eight with a distinct but not severe headache, usually frontal or temporal. As the day goes on the headache becomes worse and worse, until in the afternoon or evening it becomes almost unbearable. It then finishes up with sickness, after which the patient becomes easier, but feels much exhausted. A headache of this sort may frequently be prevented by the patient taking a mixture of bromide of potassium and salicylate of sodium overnight, or by getting up and taking it when he awakes with a heaviness in the early morning, instead of turning over and going to sleep again. The quantity necessarily varies with different individuals and with the severity of the headache ; but thirty or thirty-five grains of bromide of potassium with five to fifteen grains of salicylate of sodium, in half a tumblerful of water, may be looked upon as an average dose. If the patient feels the irritability indicative of the approaching headache overnight, or if he should have the excessive brightness which is the precursor of headache in others, he should take this dose at bedtime, and will very probably awake without the headache. If in spite of it he should awake with a heaviness in his head between four and six, he should repeat the dose, or should take it for the first time if no indication of headache has been felt the night before, but the heaviness has come on during sleep. He will then probably turn round, fall asleep again, and awake without the headache. If, however, there should be either heaviness or headache on awaking about seven a.m., a third dose should be taken. I have tried both the bromide and the salicylate separately, but I do not think that they act nearly so well as when taken in combination. (Dr. Lauder Brunton, The Practitioner, February, 1894, p. 104.)

SPASTIC SPINAL PARALYSIS.—Hereditary.

Strümpell (Deutsche Zeitschr. f. Nervenheilk., October, 1893) sums up his conclusions concerning hereditary spastic spinal

paralysis as follows:—(1) Under the influence of an abnormal hereditary defect there develops, slowly but progressively, a primary systematic degeneration of the crossed pyramidal tracts of the spinal cord. (2) The symptoms of the disease first show themselves in the third decade of life, the earliest being a sharply defined spastic disturbance of the lower extremities. (3) After many years the disease passes, as a rule, into a true spastic paresis and paraplegia of the legs. Affection of the upper extremities, the tongue, the lips, &c., in a similar manner which would indicate involvement of the pyramidal tracts high up in the cord, is very much seldomer and very much later. (4) As a rule, the pathological changes limit themselves to a degeneration of the pyramidal tracts with a slight degeneration occasionally of other systems, especially the direct cerebellar tract and Goll's column. From a clinical point of view, disturbance of the temperature sense and a lesser disturbance of the functions of the bladder are the symptoms most frequently found with this condition. (The Journal of Nervous and Mental Disease, January, 1894, p. 51.)

SPINAL CORD, CERVICAL.—Lesions of the.

[Dr. T. H. Manley appends the following conclusions to an important study of these lesions:] (1) Grave injuries of the spinal cord, from injuries in the neck, without fracture, are rare; (2) when paralysis immediately follows cervical injury it clearly establishes the fact that the cord has borne serious damage; (3) that fractures which involve the respiratory centres (from the atlas to the fifth) are almost inevitably mortal; (4) those below this point are sometimes within the range of operative relief when the apophyses alone are involved, and are not so dangerous to life; (5) fractures through the anterior osseous plane of the vertebral column, the bodies in the cervical and other regions, are not recognisable during life, and are much more common than is generally supposed; (6) the apophyseal type of fracture through the posterior plane is the most easily recognisable, and may be occasionally amenable to surgical measures; (7) fractures here, as in all other segments of the rachidian structures, are characterised by a tendency to resist displacement, and when this does occur, to spontaneous reposition; (8) the cervical segment of the column may sustain permanent injury without the association of medullary lesions of any description which entail paralysis. (New York Medical Record, October 28, 1893, p. 558.)

TETANUS TREATED BY TETANUS ANTITOXIN. —Recovery.

A boy fourteen years of age sustained a crush of the top of the thumb, which set up suppuration of the nail matrix and beneath

the thumb-nail. A week later he began to suffer from stiffness of the neck-muscles and spasms. He was sent by Mr. Willan, of Melton Mowbray, to the infirmary, being admitted on October 23. He then appeared to be a well-nourished, robust-looking lad, lying supine with his head thrown back. The face was distorted with the characteristic risus sardonicus of tetanus. At intervals of about half an hour he was seized with a spasm in which the back was arched, the head more extended, and the teeth were tightly clenched, the face and lips becoming intensely livid from suspension of respiration. In the intervals between the spasms he was unable to separate the teeth more than half an inch, but he could swallow fluids without great difficulty. He was ordered bromide of potassium and chloral hydrate mixture—fifteen grains of each every four hours. This was continued during two days without benefit, the spasms becoming more frequent and more severe. Owing to the great difficulty in swallowing it was then stopped. On October 27, injections of antitoxin were commenced. This was very kindly forwarded to Leicester by Dr. Roux of the Institut Pasteur, Paris. The total amount used was fifteen grammes of dried serum, dissolved in ten times its weight of distilled sterilised water ; 100 fluid grammes were injected in the first twenty-four hours, fifty at 6 p.m. and fifty at 11 a.m. On each occasion chloroform was administered, the fluid being injected subcutaneously with a sterilised syringe in very many punctures in the thighs, buttocks, arms and chest. In the second twenty-four hours the remaining fifty grammes were injected in two parts at 8.30 p.m. and 5.30 p.m. The punctures determined a slight and transient redness of the skin at the points of puncture. No pain was complained of on recovering from the effects of the anæsthetic. On the second day of injection the convulsions were noticeably diminished in severity, the lividity and the clenching of the teeth being less marked, as well as the arching of the back. From this time there was a slow and gradual abatement of the severity of the spasms, though they did not entirely cease for another week ; their frequency was also very much less. On October 30, he again took fifteen grains of bromide of potassium every four hours and continued to do so during one week. The improvement was undoubtedly simultaneous with the injections, and the severity of the spasms was less from the day they were commenced. It is only reasonable to ascribe the benefit to the antitoxin, as the drugs appeared to have little or no effect. As regards the local treatment, on the day after admission the thumb-nail was removed under chloroform and the suppurating matrix freely incised and dressed with fomentations of a 1 in 20 carbolic acid solution. It is remarkable how little constitutional disturbance was caused by the injections of such large quantities

of serum, and the absence of constitutional disturbance shows the thorough asepsis of the preparation and preservation of the serum. The only elevation of temperature was on the second day, when it reached 100° F. (Mr. J. St. Thomas Clarke, Surgeon to the Leicester Infirmary, The Lancet, January 27, 1894, p. 206.)

TRIGEMINAL NEURALGIA.—Removal of Gasserian Ganglion for.

Finney (*Johns Hopkins Hosp. Bull.*, October, 1893) reports three cases of removal of the Gasserian ganglion on the right side for very severe neuralgia of the fifth nerve. In each case the operation devised by Hartley—and shortly afterwards, but quite independently, by Krause—was performed. This operation consists in turning back an omega-shaped flap of skin, muscle, and bone, having a diameter of about 2½ inches, and its base at the zygoma and its apex at the supra-temporal region. This affords an opening in the skull large enough to allow of a good view of the floor of the middle fossa, and also permits a ready manipulation of its contents. The dura is stripped away from the bone, and, together with the temporo-sphenoidal lobe, lifted up out of the way with broad flat retractors. The foramina spinosum, rotundum, and ovale are thus brought into view, together with the middle meningeal artery, and the second and third divisions of the trigeminus, and, lastly, the ganglion itself. The subject of the first case—a married woman, aged 47—recovered from the effects of the operation without any bad symptom, but two months later was complaining of stiffness and a sore feeling on the right side of her head, which, however, was different in character from the pain felt before the operation. The second patient, who was a man, aged 63, suffered from severe and obstinate vomiting for the first few days after the operation, but subsequently made a good recovery, and up to the time of this report—one month later—had not had the slightest pain. The third patient, aged 69, also a man, died seven hours after the operation, apparently, it is stated, from heart disease, but it is added that the fatal termination was undoubtedly precipitated by the shock of the operation.

H. M. O'Hara, of Melbourne (*Austr. Med. Journ.*, October 15), reports a case of trigeminal neuralgia in which he removed the Gasserian ganglion with complete success. The patient was a woman, aged 66, who had been under treatment for five years without permanent result. Her sufferings were unbearable. Having thoroughly scrubbed the face and sponged well with a 1 in 1,000 corrosive sublimate solution—a procedure which the patient could not bear without an anæsthetic—O'Hara thoroughly washed out the conjunctival sac with a 1 in 25,000

solution of the same antiseptic, brought the lids together with a horsehair suture, and plugged the external auditory meatus. He then made an incision along the zygoma, over the parotid region, and in front of the ear down to the jaw. This incision was only carried through the skin, and a flap was turned down, care being taken to avoid Steno's duct, and well dusted with iodoform and boric acid. The zygoma was next exposed and divided at its apex and base, and turned downwards with the masseter; this exposed the coronoid process, which was snipped off with bone forceps. The internal maxillary artery was secured between the external pterygoid muscle and the jaw, and torsioned; the external pterygoid muscle was cut away from its superior attachments and turned down. The sphenoidal spine and the foramen ovale just in front of it could now be felt with the finger. The muscular and fatty tissues could now be cleared away, and the wound being thoroughly illuminated by means of a small electric lamp, the nerve could be seen coming through the foramen. The trephine was applied to the great wing of the sphenoid, a little of the foramen ovale being taken in. The third division of the nerve being caught in a pair of clip forceps acted as a guide to the ganglion, which could be seen to move when the nerve was pulled upon. A curette was next passed over the ganglion, and all the contents of the cavum Meckelii were removed, when a slight discharge of cerebro-spinal fluid took place. The parts were well cleansed, and a small strip of iodoform left in the wound for drainage. The zygoma was wired in position, and the skin flap readjusted. The time occupied for the whole operation was one hour and ten minutes. Except that the zygoma necrosed, the patient had not a bad symptom. She was discharged fifteen days after the operation, and, at the date of the report, was quite free from pain. The anæsthesia resulting from the destruction of the ganglion was very well marked, especially on the conjunctiva, the side of the face, and tip of the tongue. O'Hara states that this is the first operation of the kind attempted south of the equator.

At the Surgical Congress recently held in Rome (*Rif. Med.*, November 7) Novaro said the first operation of the kind done in Italy was performed by Caponotto, of Turin, by Rose's method; the patient died of sepsis. At the beginning of 1891 Novaro himself operated on a case of trigeminal neuralgia by a slight modification of Krönlein's method, the ascending ramus of the lower jaw being resected in the horizontal direction. He used the scalpel, not the trephine, to the skull, and destroyed the ganglion at its inferior and posterior part, so as not to injure the sinus. The patient was cured. For the last year sensibility, not merely tactile and to heat, but to pain, has returned, with this peculiarity, that the pain now shoots from below upwards.

In view of the fact that sensibility thus returns after a time by way of the nerves of the cervical plexus, Novaro asks whether an operation of such severity is necessary, or whether the surgeon should not content himself with resection of the second and third divisions of the trigeminus. Salomoni expressed the opinion that, although great difficulties were met with in carrying out Krause's procedure, they were much less serious than those encountered in Rose's method. D'Antona thought it important not to destroy the ganglion entirely in view of the lesions of the eyeball which were almost certain to follow. (Epitome of the British Medical Journal, December 23, 1893, p. 101.)

AFFECTIONS OF THE CIRCULATORY SYSTEM.

ANEURISMS.—Extirpation of.

Dr. Ransohoff appends the following conclusions to a paper on this subject, a part of which appears at p. 263 of this volume :— (1) Extirpation is the ideal method. It should be resorted to unless there are weighty reasons against it. (2) In aneurisms of the fore-arm and of the leg no other method should be adopted. (3) Aneurisms which have suddenly grown large from subcutaneous rupture of the sac, and those in which rupture is impending, should be subjected to extirpation. (4) In recent traumatic aneurisms the injured vessel should be divided between two ligatures ; when a sac has formed it should be excised. (5) When other methods have failed, extirpation should be tried before resort is taken to amputation. (6) In arterio-venous aneurisms extirpation should be practised, if any operation is indicated. (7) Proximal ligation is to be reserved for cases of idiopathic or spontaneous aneurisms in which the age of the patient or an enfeebled condition from other causes would make a prolonged operation hazardous, and for cases in which the position of the tumour precludes the possibility of extirpation. (Annals of Surgery, January, 1894, p. 84.)

EMBOLISM OF THE MESENTERIC VESSELS, WITH SYMPTOMS OF OBSTRUCTION.

A man 51 years of age was admitted into the North Riding Infirmary on August 14, 1893, complaining of abdominal pain, constipation, and sickness ; in fact, symptoms of intestinal obstruction. He stated that about three weeks previously, when at work and in the act of lifting a heavy bar of metal, he felt a peculiar sensation in the lower part of his abdomen. This was

followed by pain and a feeling of weakness, which necessitated his leaving work. On the same evening he passed from half a pint to a pint of blood by the bowel, and the following morning he again passed about half a pint. He was away from work for a week, during which time he experienced, more or less constantly, colicky pains in the abdomen, and also suffered from constipation, necessitating his taking a purgative. This latter fact was especially noticed by the patient, as he had been previously very regular in his bowels, rarely ever requiring opening medicine. He returned to work, but only for four or five days, the general weakness and abdominal pain compelling him to give it up. From this period up to the day of admission into hospital he said that his bowels had not been moved at all. He had taken purgatives himself, and his medical attendant had also administered them, but without effect. He had been vomiting more or less the whole time, and from what one could gather it was of a feculent character just prior to admission. The colicky pains were constantly troubling him, and varied in severity; sometimes being very severe, and then confined more to the region of the transverse colon. On admission the patient looked somewhat pale and exhausted; the tongue was foul and the temperature subnormal, and remained so, gradually falling up to the time of his death. The abdomen on inspection was found to be markedly distended, and the large bowel, especially the caput cæcum, appeared to stand out distinctly from the rest of the abdominal contents, and in the region of the left iliac fossa a distinct fulness was noticeable. On palpation the caput cæci could be felt to be extremely distended; also in the left iliac fossa a hard mass about the size of a large orange could be felt, which on percussion over it gave an obscure tympanitic note. There was no sign of a hernia, and nothing abnormal in the rectum. Dr. Munro at this time suggested embolism as a cause of the patient's condition, but the mass in the iliac fossa also inclined him to think it was possibly, or even probably, due to a tumour of a malignant character. Several copious enemata of soap-and-water were administered, but without any result. A grain of opium was also occasionally administered, and fomentations applied to the abdomen to lessen the pain, and by way of nourishment small quantities of milk and soda water, frequently repeated, were given. The milk was retained, and, in fact, he did not vomit again until after the operation. This treatment was continued until August 16, but the patient's condition remained unaltered, and, having obtained his consent to perform an operation, it was decided to open the abdomen at once. Dr. Munro, on opening the abdomen, found the following conditions:—The mass in the left iliac fossa was due to a large decolourised infarction in the mesentery of the

sigmoid flexure. There were two infarcts also in the mesentery of the small bowel; these were smaller, and retained for the greater part the dark colour of the blood, and thus were more recent than that in the mesentery of the sigmoid flexure. The infarct in the sigmoid flexure was adherent to the anterior abdominal wall and to the iliac fossa. The ascending, transverse, and descending colon were enormously distended and very dark in colour; the walls appeared to be thinned by the distension to which they had been subjected, and they had a doughy feel to the touch. The caput cæci was also enormously distended, but otherwise not so much altered. The small intestines were red and deeply injected, which, together with the more recent appearances of the infarcts, proves that the inferior mesenteric artery was first affected. The patient stood the operation well and progressed favourably for twenty hours, but then rapidly sank and died. Any further examination of the abdomen after death was unfortunately prevented.

Remarks by Dr. Munro.—I have taken the following from articles by Gerhardt and Kussmaul giving the diagnostic points of these cases:—(1) A source of origin for the embolus; (2) profuse, even exhausting hemorrhage from the bowels; (3) severe colic-like pains in the abdomen; (4) tension and tympanitic swelling, sometimes very marked; (5) considerable and rapid reduction of temperature; (6) demonstration of embolism in some of the other arteries; and (7) demonstration by palpation of infarcts between the mesenteries. In the case described it will be seen that nearly all the classical symptoms were present, and No. 7 in so marked a degree that its firmness and immobility simulated a tumour, and so led to the operation. (Dr. Munro, Surgeon to the North Riding Infirmary, Middlesbrough, The Lancet, January 20, 1894, p. 147.)

GOUTY PHLEBITIS.

One of the gravest of the local affections of gout is phlebitis, and this remarkable and interesting disease has of late years attracted much attention, so that gouty phlebitis has become familiar to us; and while phlebitis which is due to gout has its main features in common with phlebitis due to other causes, it has also distinctive characters of its own by which it may in most cases be recognised. There are the pain and, in the first instance, often acute tenderness in the course of the affected vein—usually of the lower extremity—which soon becomes full and abnormally firm to the touch, this firmness gradually increasing until, as thrombosis is established, the vessel becomes solid, and this is accompanied or followed by swelling and perhaps marked œdema of the limb. There is also in the severer cases decided constitutional disturbance. All this

commonly belongs to phlebitis in all its forms, but in gouty phlebitis the attack is usually very sudden and the pain and tenderness very severe. It is particularly prone to attack the superficial veins of the leg—the saphena veins or their branches—and very rarely in the first instance the femoral itself. Often it begins in and never passes beyond one or two or three small branches of the saphena, and it will sometimes subside almost as rapidly as it appeared. This is characteristic, but still more so is the singular way in which it will almost suddenly pass from vein to vein, and then back again in the same manner to the original spot. This is its distinctive feature. Two or three inches of a small vein in one leg suddenly become painful and tender, with all the signs of phlebitis. After lasting for a day or two or less the symptoms rapidly subside, to the great relief of the patient, when as abruptly a similar attack occurs in the other leg. This lasts for a short period and then passes away, to be followed by a third attack either in the first or second limb, and so on sometimes through many alternations until the patient is wearied by repeated disappointment and is perhaps in despair of complete recovery. The fitful character, which is certainly very striking, is not, however, always observed. The complaint begins in a small vein, but creeps onward until perhaps the greater part or the whole of one or both saphena veins is affected, and it may extend to the femoral and still pass upward. These, of course, are much graver cases, and involve all the risks and troubles of the worst forms of phlebitis. Here there are not only the greater risks of accidents from embolism, but the subsequent very prolonged trouble due to thrombosis and consequent obstruction. It may be said of phlebitis, I think, that in no other disease is the onset at once more rapid and recovery from it more tedious. With regard to embolism, perhaps, the liability to this terrible disaster has been exaggerated. In gouty phlebitis it is very exceptional. Gouty phlebitis is very frequently seen—the catastrophe of embolism is happily a very rare event. Even thrombosis is by no means always established in gouty phlebitis. Thrombosis, indeed, is always a part of phlebitis if the inflammation lasts long enough. The vein at length from this cause becomes a solid cord, but this is a process of time. It is a mistake to expect to find an inflamed vein in the condition of a solid cord in the earlier stage. The clotting, no doubt, is a rapid process, but the contraction and solidification of the clot are gradual ones, and in gouty phlebitis the inflammation often does not last long enough for this to occur, so that fortunately the patient escapes the tedious and troublesome consequences of confirmed thrombosis; for in the first place the affected vein is often never reduced to the condition of a solid cord, and in the second, even when this happens, the

tributary stream which is thus shut off is only an insignificant one, and does not materially compromise the circulation of the limb. (Sir William Savory, Bart., The Lancet, January 13, 1894, p. 76.)

INTRAVENOUS INJECTION OF SALINE SOLUTION IN CASES OF SEVERE HEMORRHAGE.

At the Obstetrical Society on December 6, 1893, a paper on this subject was read by Dr. P. Horrocks. After pointing out that transfusion had been performed for centuries, the author mentioned experiments that had been made abroad and in England to show that an injection of saline solution into the veins of an animal bled to apparent death, would revive it and that recovery would take place. The late Dr. Wooldridge had done this and had found it best to inject as much saline fluid as blood lost. The following propositions were then laid down, —(1) when a person is dead from rapid hemorrhage there is still in the body sufficient blood to carry on life if it can be circulated; (2) theoretically half the volume of blood could do the same work if it was given double the velocity; (3) death from hemorrhage is due to failure of the heart, and this is due to want of expansion, owing to the fall in the blood pressure; (4) this blood pressure can be raised if as much fluid be transfused as there has been blood lost. Details were given of six cases in which the patients had lost blood to such an extent as to become blanched to the lips and pulseless at the wrist. Saline fluid was injected, with the result that four recovered. A seventh case was mentioned in which consent to an operation could not be obtained for several hours; the patient died just as she arrived at the hospital. Transfusion of six pints was done, but with no effect. Details of the method of injecting the fluid by means of the apparatus exhibited by the author last year at the Obstetrical Society was given. He summed up his conclusions as follows:—(1) transfusion of blood is useless and probably injurious; (2) water, with or without salt, should always be used; (3) amount injected should equal as far as possible amount lost; (4) enough should be injected to make pulse felt at wrist; (5) the worst cases require six pints; (6) no patient should be allowed to die from severe hemorrhage without an attempt being made to save life by transfusion; (7) in less severe forms of hemorrhage, where the patient is in a low condition, but not pulseless, injections of two to five pints of saline fluid should be given to avoid secondary syncope; (8) in the more moderate cases each one must be judged on its merits, but when in doubt it is better to inject. Many of these, however, would rally by copious watery injections into the cellular tissue between the shoulders and other parts and into the rectum. (British Medical Journal, December 16, 1893, p. 1327.)

PERICARDIAL EFFUSION.—Early Signs of.

In opposition to the almost universally accepted teaching that commencing pericarditis is first manifested by an increase (broadening) of the cardiac dulness at the base of the heart, Ebstein finds that the first alteration occurs in the lower regions of the area of dulness. At first there is a stretching of the pericardium towards the left side, but this is seldom discoverable, partly on account of the occurrence simultaneously of left pleurisy, partly on account of the overlying of the cardiac apex by the lung, partly on account of the loud tympanitic note in the semilunar space. After a short time the pericardial sac will be distended towards the right side also; and this enlargement may be recognised clinically in nearly every case by the appearance of an absolute, or almost absolute, dulness in the fifth right intercostal space, in the region named by Ebstein the cardio-hepatic angle (*Herzleberwinkel*). The symptom is all the more demonstrable if it occurs under the observation of the physician, because the possibility of mistaking it for the other processes which bring about complete dulness in this region is entirely excluded. Further, this absolute dulness in the cardio-hepatic angle is of importance for the differential diagnosis between pure hypertrophy of the heart and accumulation of the fluid in the pericardium, because, according to Ebstein, so far as has been hitherto ascertained, absolute heart dulness between the fifth and sixth ribs, even in extreme hypertrophy of the right heart, does not extend beyond the right sternal margin. The cardio-hepatic angle marks also the spot at which, during the retrogression of pericardial effusions, the dulness remains longest observable. A series of clinical histories serves as a proof of the above propositions.—*Virchow's Archiv*, vol. cxxx, No. 3, and *Archiv f. klin. Med.*, No. 37, 1893. (The Practitioner, February, 1894, p. 135.)

PULMONARY REGURGITATION.

In a very complete paper on this subject Gerhardt states that this lesion occurs in the proportion of 1·5 per cent. of all cases of valvular heart disease. He collected from the literature of the subject records of 29 cases. In three-fourths of these the lesion was the result of endocarditis, which in seven cases was the result of rheumatic fever; one case was caused by gonorrhœal infection; in one case an injury seemed to be the starting-point of the trouble; in one case the disease originated after childbirth. In one case the pulmonary disease was certainly primary, and in another case probably so. Congenital malformation and the persistence of fœtal conditions predisposel to disease of these valves. In 15 cases only the pulmonary valves were affected; the other valve diseased was most often the aortic, rarely the

mitral. The patients' ages varied from 11 to 84 years. The signs of the affection are as follows:—The impulse is too powerful, and is perceived over too large an area, being especially marked to the right of the usual position of the impulse. The heart dulness is increased, this increase being caused by hypertrophy and dilatation of the right chambers of the heart. A diastolic murmur is heard, loudest over the origin of the pulmonary artery, and conducted downwards to the apex, and is not conducted along the great arteries into the neck. The second sound is sometimes present, sometimes lost; frequently a systolic murmur co-existed, showing stenosis as well as regurgitation. In addition to these physical signs, Gerhardt noticed two others to which attention does not seem to have been called. In five cases he noticed that over every part of the lungs, especially over those parts most remote from the heart he heard two dull sounds, something like murmurs. This he calls double sound in the branches of the pulmonary artery. A second sign, which may be called audible capillary pulse in the pulmonary circulation, is thus described: in parts of the chest at some distance from the heart (e.g., at the outer border of the right shoulder blade), when the patient draws a long, deep breath, the vesicular respiratory murmur grows louder with each systole of the heart, and then becomes more feeble. —*Charite Annalen*, xvii., p. 255. (Dr. H. T. Bewley's Report, Dublin Journal of Medical Science, October, 1893, p. 308.)

SALT SOLUTION AFTER HEMORRHAGE.—Its Administration.

In the *Allgemeine Wiener Medicinische Zeitung* Dr. Warman draws attention to a new method which he has employed for the administration of salt solution after severe hemorrhage. This is usually accomplished by injecting the solution into a vein, but this method has many disadvantages, especially in private practice: the solution has to be carefully sterilised, by which much time is lost, the special apparatus required is frequently not at hand, and it is often very difficult in severe cases to find and open the vein. Dr. Warman, therefore, in a case in which there was alarming hemorrhage after abortion, adopted the plan of injecting about a litre of water, to which a teaspoonful of ordinary salt had been added, into the rectum by means of an ordinary enema syringe. In order to prevent, if possible, an action of the bowels, the fluid was only allowed to enter very slowly. The result, as Dr. Warman expresses it, surpassed all expectations: within a few minutes the patient had a slight rigour, the pulse, which before could not be felt, was distinctly perceptible at the wrist, the respiration became deeper and the patient made a good recovery. Encouraged by this result

Dr. Warman has since tried this treatment in twenty-six other cases, and always with success. The rectal method has considerable advantages over intravenous injection, as the solution is easily prepared and no special apparatus or skill is necessary. Dr. Warman thinks that the fluid is entirely absorbed in less than five minutes. He points out that one great danger which is apt to occur in the venous method—namely, over diluting the blood and so destroying the red blood-corpuscles—is quite absent from his method. The chief disadvantage in the rectal method is that in some cases, when the patient is completely unconscious, the sphincter ani does not act properly, and the fluid is not retained in the bowel and immediately runs out. According to Dr. Warman's experience, however, this has only occurred when the hemorrhage has been less severe; but when much blood had been lost the absorption was so rapid that no difficulty was experienced. The quantity of solution usually employed was between one and two litres, and all the cases treated were obstetrical ones; but Dr. Warman believes that this method of treatment would be equally serviceable in other classes of cases, but not in enteric fever, when he thinks that there would be considerable danger of removing the scabs from the ulcers. (The Lancet, February 24, 1894, p. 492.)

AFFECTIONS OF THE RESPIRATORY SYSTEM.

CROAKING INSPIRATION IN CHILDREN.

There is an interesting condition which is occasionally to be met with in newly born infants—where inspiration is accompanied by a curious croaking noise, the cry sound being, however, quite clear. The croak continues during sleep and even when an anæsthetic is given. It is, however, variable in degree and occasionally the distress in breathing is considerable and is accompanied by some recession above the sternum. These conditions appear to depend upon an overcurved and rigid state of the epiglottis and never seem to be attended with fatal results, but tend to get well as the child grows. Dr. Lees, in vol. xxxiv. of *The Transactions of the Pathological Society*, describes a case in a child a year old. The peculiar symptoms had existed from birth. A view was obtained with the laryngoscope and it was seen that the epiglottis was folded on itself and that the aryteno-epiglottic folds were close together and almost overlapping. Shortly afterwards the child contracted diphtheria and died. The post-mortem appearances corresponded with what had been seen with the laryngoscope, the epiglottis being much more curled than normal and the

aryteno-epiglottic folds being almost in contact. These cases are to be distinguished from laryngismus stridulus, the attacks of which come on suddenly—often in the night—and do not continue during sleep. They generally depend on reflex and particularly on gastric disturbance, and are usually benefited by general treatment, such as purgatives and emetics. Two conditions which not infrequently occasion difficult respiration must also be remembered—viz., adenoid vegetations and nasal obstruction from specific rhinitis. The results of nasal or naso-pharyngeal obstruction in early infancy are very serious, because compensating mouth breathing is difficult and in the case of some children during sleep it is impossible. Dr. Collier, formerly a resident officer at the Hospital for Sick Children, Great Ormond Street, has paid a good deal of attention to this subject and has given me the following account of the advantages to be gained by nasal intubation in certain of these conditions. French catheter tubing was used; it was dipped into hot water and suitably curved. A piece was passed along each nostril, reaching back to the lower edge of the soft palate and projecting a short distance through the anterior nares, where it was fixed by silk to its fellow and by strapping to the cheek. Nasal obstruction, even catarrh from cold is always serious in infants. If obstruction interferes with sleep intubation is of value as a temporary measure. In cases of laryngismus stridulus the nose and pharynx should always be examined. Adenoids should be removed, however young the patient, naso-pharyngeal intubation being only a temporary measure. I have seen well-marked adenoids produce nasal obstruction in children a few weeks old, the adenoids being evidently congenital in origin. Mouth breathing is an acquired habit, and it follows therefore that infants with serious naso-pharyngeal obstruction cannot live unless the condition is relieved by surgical interference. (Mr. Bernard Pitts, The Lancet, September 16, 1893, p. 678.)

ENLARGED AND CASEATING MEDIASTINAL GLANDS.—Their Special Dangers in Children.

Enlarged and especially caseating mediastinal glands occasionally give rise to serious trouble in the following ways:—(1) by pressing on the trachea or bronchus; (2) by one or more glands ulcerating into the trachea or bronchus and causing obstruction or even becoming detached and impacted in the larynx; (3) a suppurating mediastinal gland not infrequently is the cause of a gangrenous ulcer of the lung. A communication is sometimes made with the œsophagus, or the suppuration from the gland discharges into the pleural sac. Fatal hemorrhage may arise from the ulceration involving a branch of the pulmonary artery. During

the last few years many examples of such conditions have been brought before the medical societies. Dr. Wynn Westcott recorded the case of an apparently healthy boy aged 3 years who died suddenly from dyspnœa. A gland was found to be impacted in the larynx and another at the bifurcation of the trachea. Just above the bifurcation and on the right side there was an ulcerated opening. Mr. R. W. Parker in the twenty-fourth volume of the Transactions of the Clinical Society records a sudden and fatal dyspnœa in a child aged 1 year. Tracheotomy was performed without benefit and a gland was found post mortem just above the bifurcation of the trachea, having ulcerated its way into the trachea by a circular opening. The gland was attached to the opening by a pedicle which seemed to consist of part of the capsule, several of the bronchial glands were caseous, and there was tuberculous consolidation of the upper part of the right lung. In the Pathological Transactions of 1889 the late Dr. Gulliver showed the larynx and trachea from a child aged four who was admitted to St. Thomas's Hospital suffering from dyspnœa; the child became well enough to be discharged. A few days afterwards it was readmitted and died soon from a similar attack of dyspnœa. The specimen showed that the lowest part of the trachea is quite blocked by a caseous mass which has escaped into it from an adjoining tuberculous lymphatic gland on its right side. The first attack of dyspnœa was no doubt caused by pressure of the abscess and was relieved by its bursting. The fatal attack was due to the caseous gland making its way into the trachea. Dr. Edward Wright, of Huddersfield, relates a case where he performed tracheotomy for dyspnœa in a child, and as no relief followed a catheter was pushed down to the bifurcation and ruptured an abscess; about an eggcupful of fetid pus was coughed up and the patient recovered. There can be no doubt that the abscess was caused by the breaking down of a bronchial gland. If there is good reason to believe that the difficulty of breathing in any case depends upon pressure from a mediastinal abscess careful exploration of the bronchi must be attempted; possibly, too, the introduction of a curette might be indicated if abscess or gland matter was found in the trachea or bronchus. Dr. Percy Kidd, in the thirty-sixth volume of the Pathological Transactions, gives the case of a girl aged 15 who died in the waiting-room of the Brompton Hospital from profuse hæmoptysis. It was found post-mortem that the bleeding was due to the perforation of a large secondary branch of the pulmonary artery, the result of ulceration commencing in the bronchus and set up by a calcareous gland pressing on the air tube. In the same volume Mr. John Poland gives the case of a child aged 1 year and 8 months who died from a suppurating bronchial gland opening into the

œsophagus and left bronchus. In the thirteenth volume of the St. Bartholomew's Hospital Reports Dr. Gee gives several cases in young children where gangrenous abscess in the lungs was the result of a caseous gland ulcerating into a bronchial tube. Excluding the presence of a foreign body, suppuration of a mediastinal gland opening into a bronchus is certainly the most frequent cause of a gangrenous abscess of lung in children. (Mr. Bernard Pitts, October 14, 1893, p. 915.)

INTUBATION AND TRACHEOTOMY.—I think intubation is preferable to tracheotomy for the relief of acute laryngeal obstruction in children under seven years of age for the following reasons: It relieves dyspnœa; it is more quickly and easily done; consent of parents or guardians is more readily obtained; it will be resorted to earlier in the disease; it requires no more skill and care in the after-treatment than does tracheotomy; the tube takes care of itself; it is less likely to "gum," or to become obstructed; no anæsthetic is required; as there is no cutting, there is no hemorrhage; it is not regarded as a surgical operation by the parents and friends; and finally, the records of the Boston City Hospital indicate, that the results are nearly as favourable, as after the other method of treatment. Such are the reasons for the opinion, and they are based upon the experience of my colleagues, and of myself, in upwards of a thousand operations. The type of the disease will vary at different times, thereby affecting the results. Accidents and complications will occur not infrequently in both plans of treatment. But after making due allowance for these facts, as well as for individual preferences and peculiarities, I venture the statement that Dr. O'Dwyer's operation will remain in the opinion of a large number of surgeons for a long time to come, what it is at present, a reasonably safe, efficient and satisfactory method of relieving acute laryngeal stenosis in children.

Tracheotomies and Intubations at the Boston City Hospital to July 1, 1892.
(Fractions omitted.)

	No.	Recov.	Per cent.
Tracheotomies, total	514	117	22
Intubations, total	502	97	19
Tracheotomies, primary	456	110	24
Intubations, without tracheotomy	442	90	20
December 31, 1886, to July 1, 1892.			
Intubations, total	502	97	19
Tracheotomies, total	187	22	11
Intubations, without tracheotomy	442	90	20
Tracheotomy, primary	129	15	11
Tracheotomy, secondary	58	7	12
Tracheotomy, to December 31, 1886	327	95	29

(Dr. G. W. Gay, p. 350. Boston Medical and Surgical Journal, October 19, 1893, p. 389.)

MALIGNANT DISEASE OF THE LARYNX.—Radical Operation for.

At the Laryngological Society of London on October 11, 1894, Mr. Butlin said that to condense his remarks he would divide them under three headings: first, the circumstances under which laryngeal cancer should be removed; second, the operation which should be practised; third, the after-treatment of patients who had been operated on. Under the first heading he had little to add to what he had before said, but would repeat that the most favourable cases are those in which the disease is of intrinsic origin, and still limited to the interior of the larynx, is of small extent, uncomplicated, and particularly in which it lies towards the front of the larynx. Under the second heading, also, he had little to add to what he had previously said. The more he had seen of the operative surgery of malignant disease of the larynx the more convinced he was that removal of the whole or a large part of the larynx for malignant disease was seldom followed by sufficiently good results to justify the operation. The best results had followed and were likely to follow thyrotomy with very free removal of the soft parts in the interior of the larynx. He could look back on one case in which the patient was alive and free from disease more than five years after operation (sections of this growth, epithelioma, were under the microscope on the table), and on another case in which the patient was still well four years after operation. Compared with operations for extensive or extrinsic disease, such thyrotomies were comparatively free from danger. Out of many of the latter he had lost only one case; out of few of the former he had lost two cases. On the question of after-treatment he had more to say, because he had given a good deal of attention to it, and had regularly during the last three years carried out the suggestions he had made at Berlin. He removed Hahn's tube directly the operation was over. He made no attempt to close the wound. No tracheotomy tube was used, and no dressing was inserted into the interior of the larynx. But the surface was dusted with iodoform, and the iodoform was frequently applied; this was easily effected. Watching these patients, he had found that when they swallowed, the two sides of the wound into the larynx separated to such an extent that the nozzle of the insufflator could be easily inserted between them, and the powder blown directly on to the raw surface. He regarded this as of the highest importance; he had a great opinion of iodoform in wounds of the mouth and larynx, but it was not likely to do good unless it reached the actual surface of the wound, and this was difficult to effect when the powder was insufflated through the mouth. He covered the external wound with a piece of iodoform gauze, which was changed as often as was necessary,

even if this was fifteen or twenty times a day. Instead of propping the patient up in bed, he took away all the pillows except one, so that the head lay low, placed the patient on his side, and thus did what he could to diminish the tendency of discharges to pass down into the bronchi. And, last, he fed the patients chiefly by means of nutrient enemata during the first few days ; but, usually, on the day following the operation, he encouraged an attempt to take fluids by the mouth. Water was first tried, and the patient was made to sit up and lean well forward, or to lean over the edge of the bed, so that the fluid which passed into the larynx ran out through the wound immediately. If the patient succeeded in taking water without getting any quantity of it into the larynx, he was allowed to take beef-tea, milk, &c., and to try soft solids. Mr. Butlin had not lost a case of thyrotomy since he had employed these measures, and he fully hoped that his later success was due to the better measures which had been adopted in the after-treatment of the patients.

Dr. Semon, first in reply to the question addressed to him by Mr. Cresswell Baber, said that he did not deny the possibility of primary perichondritis of the larynx, but that such an event in his experience must be exceedingly rare. He had never seen a case in point. The poor vascularisation of the perichondium *a priori* made the occurrence of a primary perichondritis a very unlikely event, and in all his cases, either at the time or later, a true explanation of a traumatic or diathetic character had been found. With regard to the indications for, and the technique of, radical operation as laid down by Mr. Butlin, he agreed practically with the exception of a few details to everything that Mr. Butlin had said, and wished especially to emphasise the desirability of arriving early at a decision as to the nature of the laryngeal growth and of operating early. The chances then were infinitely better than if the operation was postponed to a later period. Altogether the number of cases suitable for operation was small in comparison to the total of cases seen. He had now seen about 100 cases of malignant disease of the larynx in private practice, and had only in about 10 per cent. of all these felt justified in advising a radical operation, such as partial extirpation of the larynx or thyrotomy. The latter was, of course, not a very serious operation ; at the same time he could not go so far as some of the Continental surgeons did, and altogether deny or underrate its risks. Against septic pneumonia great care could perhaps protect to a certain degree, but the coma with rise of temperature which occurred in two of his cases, without the post-mortem examination giving a clue as to the cause of these phenomena, certainly formed a very serious feature, and one to be always taken into account when the

prognosis of the operation was discussed. Broadly speaking, radical operation had been successful in his cases in exactly 50 per cent., *i.e.*, in five cases the patients having survived in good health and without any recurrence for periods now varying from one and a quarter to seven years. Of the remaining five cases, in three earlier and hence less extensive operation might possibly have averted the fatal result, but in two cases death could not be accounted for. The methods of operation selected in his cases had been (1) partial extirpation of the larynx, (2) subhyoid pharyngotomy, (3) thyrotomy with and without resection of parts of the cartilaginous framework. The chances were, of course, the better the more the operation could be limited to the soft parts, hence he once more urged the desirability of early diagnosis and operation. (Medical Press and Circular, November 1, 1893, p. 446.)

PHTHISIS.—Fever in Relation to Prognosis in.

Dr. Strümpell emphasises the importance of recognising the particular type of fever present in cases of pulmonary tuberculosis. He says that if one is to arrive at a correct appreciation of any particular case, special attention must be paid to the question of prognosis, a question in which the physical condition of the lungs plays but a subordinate part. On this point there are other far more important factors to be considered, such as hereditary taint, the general and constitutional necessities of the patient, among the latter of which Professor Strümpell considers chronic alcoholism to be the most unfavourable; the pace at which the disease has hitherto progressed; and finally the fever. As to the cause of the fever, Strümpell is of opinion that, except in miliary cases, it is not to be ascribed to the tuberculosis, but to secondary inflammatory processes, set up by the invasion of pus and other cocci. In a number of cases there is, as everyone knows no fever at all. The patients feel well, their lung trouble being stationary or making but minimal advances. Should, however, fever set in its type is of the greatest importance for establishing a prognosis. Strümpell classifies the various forms of fever in phthisis as follows:—(1) *Status subfebrilis*—here the morning temperature is normal, the evening 100·4° to 101·3° F. In such cases the disease makes but slow progress, and amelioration may be expected by improving the general condition of the patient. (2) *Febris hectica intermittens*—with this type of fever (morning nearly normal, evening 101·3° to 104° F.) the disease is steadily advancing, though in such cases a feeling of good health may be maintained for a considerable time. (3) *Febris remittens*—(morning, 100·4° to 101·3° F., evening, 103·1° F.). This type is far more unfavourable, as it points to the presence of lobular inflammation. (4) *Febris*

continua—except in miliary tuberculosis, this form of fever is found almost exclusively in cases of phthisis which start with acute symptoms, though it may be found interpolated for several days in cases in which the fever otherwise runs a remittent or irregular course. In either case the prognosis is unfavourable. The last remark is equally true of Strümpell's fifth fever type, that totally irregular form which is observed throughout the whole illness in many cases, though only in the last stage in others. That exceptions to the above rules will be found goes without saying, but it is none the less a significant fact, that in nearly all cases of phthisis in which pyrexia is present, the fever invariably assumes the form of one, and only one, of the types in question. Any change which may take place is brought about by the presence of complications, and it is frequently observed that the fever, set up by intercurrent diseases, lasts on after they have subsided, thereby showing that they have instilled renewed vigour into the phthisical process. Granted that the fever forms a most important indication in prognosis, it follows that it must also be the standard by which antiphthisica must be tested, for it is only by their effect on the fever that a just estimate of their value can be arrived at. On these grounds Strümpell rejected both tuberculin and creosote in the treatment of phthisis ; the former he considers to be absolutely injurious, having frequently seen apyretic converted into febrile forms by injections of Koch's specific.—*Muenchener medizinische Wochenschrift.* (New York Medical Record, February 3, 1894, p. 141.)

PLEURAL EFFUSIONS MULTILOCULATED.

Rudolph draws attention to the practical importance of this form of pleural effusion. The loculi may be quite separate from each other or may communicate. The character of the effusion must depend on the causation ; in empyemata the tubercle bacillus, the streptococcus, the pneumococcus play the chief part. The loculi may even contain different kinds of fluid. He records a case in which the patient had an empyema on the left side. After 750 c.cm. of pus had been evacuated, the physical signs over the præcordium remained unchanged. At the necropsy, in addition to a purulent pericarditis and an endocarditis, another empyema was found between the mediastinal pleura and the lung, a situation which the author thinks a frequent one for the second empyema. In the third and fourth cases there was a serous effusion in patients with early phthisis, and it was only when the second loculus was tapped that the physical signs cleared up. Want of correspondence between the amount of fluid and the extent of the dulness is an important sign. Thus the fluid should be measured, and the chest examined after the

evacuation. The persistence of fever in the absence of other cause for it should suggest a second loculus. The prognosis depends on the primary disease, and on the recognition of the condition. If the effusions are serous and small the salicylates are useful. Tapping may be required. If the effusion is purulent the chest must be incised, and, according to the author, a piece of rib removed.—*Centralblatt für Klinische Medicin.* (New York Medical Record, October 21, 1894, p. 527.)

PNEUMOCOCCUS EMPYEMA.

At the Royal Medical and Chirurgical Society, on February 27, 1894, Dr. Washbourn communicated a paper on cases of pleurisy caused by the pneumococcus, and with constitutional symptoms resembling those of pneumonia. He described three cases. In the first case the symptoms were those of pneumonia, but the physical signs were not characteristic and the sputum was not rusty. The attack began suddenly with a rigor, and on the tenth day the temperature had fallen and the constitutional symptoms had disappeared. The patient was considered to be convalescent, but the physical signs did not clear, and the temperature subsequently rose. An exploration of the chest revealed the presence of pus. A drainage-tube was inserted and the patient made a good recovery. The pus was found to contain the pneumococcus by the usual bacteriological methods. The case was at first considered to be one of pneumonia followed by an empyema but looked at it in the light afforded by the other cases he believed that it was one of primary empyema. In the second case the constitutional symptoms were those of pneumonia, and included high temperature, cough, rapid breathing, delirium, and herpes. The physical signs, though not typical, were not more atypical than they often were in pneumonia. The patient died after a few days' illness. At the post-mortem examination the lung was found to be healthy, but there were fifty-four ounces of pus in the right chest. The pus contained the pneumococccus. In the third case, that of a child, there was double pleurisy with some effusion. A few ounces of fluid were removed by aspiration, and were found to contain the pneumococcus. The case terminated fatally, and at the post-mortem examination both pleuræ were found to be covered with thick tenacious fibrin. It was well known that the pneumococcus was the most common cause of croupous pneumonia, and the same organism had been found in pleurisy and empyema. Sufficient stress had, however, not been laid upon the fact that the pneumococcus might produce the same constitutional symptoms when invading the pleura as it did when invading the lung. Dr. Washbourn believed that the second case showed that this was true. The third case was of interest, inasmuch as the

constitutional symptoms were similar to those of pneumonia. The patient might have recovered, and the case would probably have been considered to be one of pneumonia. He believed that many cases diagnosed as pneumonia, but with equivocal signs, were really cases of pleurisy caused by the pneumococcus. He would point out the importance of exploring the chest in such cases, and would urge the necessity of the bacteriological examination of the pus of empyemata, as it was possible that, when due to the pneumococcus, a simple aspiration would be sufficient.

Dr. Hale White said that, in addition to the two cases under his observation which were recorded in the paper, he had seen four other cases during the last few months. A man was brought to hospital with every sign of pneumonia, there having been a rigor, herpes, and rusty sputum, with rapid breathing and high temperature. A loud rub on the right side obscured the physical signs. The temperature gradually fell in eight days and he was only slightly better; it then rose again and the man died suddenly. At the post-mortem examination a small empyema was found at the base of the right lung, and pus had soaked into the lung, which was partly gangrenous. The patient also suffered from malignant endocarditis. A girl came into hospital with a fairly typical history of pneumonia. At the left base there was much dulness, but only a little bronchial breathing. Three ounces of pus were obtained on aspiration. After eleven days the temperature gradually fell and she died suddenly in the night. At the necropsy no signs of pneumonia were found, but there was a thick layer of fibrinous lymph in the pleura, with some turbid fluid. A middle-aged woman was admitted with marked signs of pneumonia at the left base, but the area of dulness overshadowed the other signs. The temperature gradually fell and then began slowly to mount again. Repeated attempts to find pus resulted in the evacuation of four ounces; after that she recovered. A boy aged six was admitted with a typical history of pneumonia. The temperature, after falling, began slowly to mount again. Half an ounce of pus was found by aspiration, and after that the patient did well. He related other cases to show the association of the pneumococcus with empyema, meningitis, and endocarditis, and said that it perhaps explained the association of jaundice with one case of pneumonia and of retraction of the head with another. In those cases of empyema due to the pneumococcus the signs would not be typically those of pneumonia, the local signs being especially aberrant: the temperature usually fell slowly, the physical signs did not clear up readily, and the patient did not seem to be much better after the fall of the temperature. With the further rise of the temperature diarrhœa often developed. The disease was

general, and might affect not only the pleura, but also the meninges, &c. Pericarditis, when it occurred, was due to an infection of the pericardium by the diplococcus, and not to simple extension from the pleura, as had been commonly taught. There need not always be pus present to explain the physical signs, for in one case with the second rise of temperature there occurred a rigor and a large fibrinous exudation without empyema.

Dr. Sansom said that it did not seem to him that influenza had been excluded from these cases. The bacillus of influenza was very apt indeed to be associated with other well known bacilli. Thus, influenzal pleuro-pneumonia was recognised, and influenza gave remarkable help to the development of tuberculosis. The cases related resembled the forms of pneumonia often met with since the influenzal epoch, the general symptoms being severe, while the local condition might be atypical. The influenza bacillus, having a tendency to attack nervous structures, disturbed the trophic condition of the lungs, and then the pneumococcus could develop more exuberantly.

Dr. Kanthack said that it was generally admitted that the pneumococcus was the common cause of pneumonia. Since October he had examined 15 complicated cases of pneumonia, and in all the pneumococcus of Fraenkel was present; in 13 it was in pure culture, and in two others it was associated with the staphylococcus pyogenes aureus and a streptococcus respectively. If the sputum of a patient before the pneumonic crisis was injected into a rabbit or guinea-pig the animal died from pneumococcus septicæmia, but if sputum taken after the crisis was injected the animal was rendered immune from pneumococcus infection. He examined a case of purulent meningitis and found the lungs free, but the pus in the cerebral and spinal membranes contained pure cultures of pneumococcus. In a case of ulcerative endocarditis the pneumococcus was found associated with the staphylococcus albus and aureus; the same three organisms were found in embolic abscesses in the lungs. In a case of purulent peritonitis in a young girl and in another of suppurative pericarditis and peritonitis with empyema, in two cases of otitis media, in one of empyema of the frontal sinus and in one of pneumonia suddenly fatal and associated with empyema pure cultures of the pneumococcus were found.

Dr. Church asked whether any control experiments had been performed with the pus from ordinary empyema to see whether the pneumococcus could be found in them.

Dr. Hale White, replying for Dr. Washbourne, said that pneumococci had been found in the pus of ordinary empyemata. He said that it was remarkable that the pneumococcus often did not produce the toxic symptoms if it was not developing

in the pleura or lung. People badly affected with the toxin of pneumonia were liable to die suddenly. (The Lancet, March 3, 1894, p. 540.)

THYROTOMY FOR LARYNGEAL PAPILLOMA IN CHILDREN.

If it is considered to be desirable to remove papillomata by division of the thyroid cartilage, it is best to perform a preliminary tracheotomy; but when the operation is required for recurrent trouble and the child has been previously accustomed to the use of a tracheotomy tube the tracheotomy and the exploration of the larynx may be combined in one interference. Thyrotomy is a simple operation, and if it is carried out with care it involves little additional risk to an ordinary tracheotomy. Blood must not be allowed to find its way into the trachea and the division of the cartilage must be made exactly in the median line and, if possible, not quite so far as the upper border. With care in the after adjustment of parts there need be no fear as to the maintenance of the parallel position of the cords and the after condition of the voice depends on the amount of tissue which has to be removed and not on the mere exploration. No elaborate tampon tube is necessary for the trachea; it is difficult in young children to obtain one which will act efficiently. All bleeding in external parts must be stopped before the larynx is actually opened. By having a number of small pieces of sponge with strings attached ready for use an assistant can easily keep the trachea above the tube packed, so that no blood can pass down, and with suitable retractors an excellent view of the cords is obtained when about four-fifths of the cartilage have been divided. If cocaine is freely applied from time to time it prevents spasm during manipulation, and with fine scissors curved on the flat the growths can be accurately trimmed away. The most difficult ones to remove are those which are situated between the bands and on the under surface of the epiglottis. By passing the finger from the mouth through the larynx the more concealed growths are better brought into view. The curette does not act very efficiently. It often passes over the surfaces of the growths and leaves their bases untouched. A fine point of Paquelin's cautery may be passed over the points of section and it seems to act more locally and exactly than caustic, such as chromic acid, however carefully it may be applied. The two halves of the cartilage are then adjusted by a couple of sutures and the external soft parts are carefully brought together. The tracheotomy tube can generally be dispensed with after two or three days. When operating on recurrent papillomata, and the larynx has to be opened for the second or third time,

it has been my practice not to suture the cartilage, hoping that a more roomy larynx will thus be obtained. The results, so far as the voice is concerned, have been just as satisfactory as when more close proximation was aimed at. In the study of Brun's tables of thyrotomies Albert Hoffa finds that of 94 operations only 4 terminated fatally—1 from pyæmia, 1 from diphtheria, and 2 from hemorrhage into the lungs. He shows that the operation is not dangerous and that the effects on the voice are extremely dependent on the seat of the lesion and on its special characters. Thyrotomy for removal of multiple papillomata is now quite a common operation, and many so called successful cases are recorded—*i.e.*, cases which have recovered from the immediate effects of the operation and are in good condition as to breathing and in fair condition as regards the voice a few months afterwards. Unfortunately it is common for such cases to relapse after a year or even later. Cases which have been perfectly cured by one operation are the exception, and recurrence is not uncommon within a year, even when every care is taken to remove all visible growths. This marked tendency to recurrence makes me very sceptical as to reported cures in children by the endo-laryngeal method. Mr. G. Stoker brought a very remarkable case before the Medical Society on March 18, 1889. It was that of a young man who at the age of 7 years lost his voice, and was for four years under treatment by a laryngologist, who diagnosed warts and who made many attempts to remove them by sponging the interior of the larynx. At a special hospital he was afterwards operated on every week with forceps and cautery for 100 weeks. He was then placed under the care of a distinguished laryngologist, who in five years operated 120 times by the endo-laryngeal method; the voice during this time occasionally returned. When the patient arrived at the age of 20 he acquired the knack of auto-laryngeal operation and for two years had succeeded in keeping the larynx fairly free by operating every fortnight, and was able to speak in a gruff voice. (Mr. Bernard Pitts, The Lancet, September 16, 1893, p. 680.)

TRACHEOTOMY FOR DIPHTHERIA.—After Treatment in.

Success in tracheotomy for diphtheria depends very largely on the treatment after operation. In vol. xxvi. of the *St. Bartholomew's Hospital Reports* 22 cases of tracheotomy for diphtheria are reported by Drs. Ogle and Willoughby, with 12 recoveries and 10 deaths. The average age of the children who recovered was $4\frac{1}{2}$ years, and of the fatal cases $2\frac{1}{5}$ years. In 9 of the successful cases tracheotomy was done directly after admission. Nasal feeding by a soft catheter was practised

whenever there was difficulty in taking food, and it was persevered in for a week or more if it was found to be necessary. In a depressing disease like diphtheria it is most important to stimulate the powers of the patient, and nasal feeding is far more efficient than the giving of nutrient enemata. Much of the treatment which is advocated in the text-books is apt to be overdone, particularly the routine employment of the tent bed and steam spray. It is quite pitiable to see children fighting for their lives under such enervating conditions. The air of the room should be kept pure and at an even temperature of 65° F.; above all the bed should not be placed near a hot fire with the spray from a kettle constantly playing over the face and body. A sponge kept warm and moist should be always over the tube and the inner tube should be changed every hour or even oftener whilst the discharges are thick. A great deal of harm may be done by a too zealous nurse, especially by the constant introduction of a feather to clear the tube and by attempts to thus extract membrane from the trachea. If actual obstruction takes place it is better for the surgeon to take the tracheotomy tube out altogether and to examine the trachea before replacing it. When membrane is present on the fauces or the pharynx the use of perchloride of mercury by means of a hand spray appears to be more beneficial than solutions of bicarbonate of soda, borax, or phosphate of soda. At the Hospital for Sick Children, Great Ormond Street, a mercury solution of the strength of 1 in 1000 has been employed by Dr. Collier in some 70 cases without producing any signs of irritation or evidence of mercurialism. Concerning the details he writes to me as follows: In using the hand spray it was found necessary to use a tongue depressor, because, however willing the patient might be, the solution did not thoroughly reach the posterior pharyngeal wall unless the tongue was depressed. Each spraying procedure lasted for from two to four minutes, including a pause for a few seconds at the end of each half-minute. Whilst membrane continued to be evident the application was made every three hours; it was then continued for a day or two at intervals of six hours. In nasal cases the nose was douched with warm boracic solution every three hours and was sprayed with a mercury solution after each douching. The tracheotomy wounds were sprayed every two hours with the mercury solution, care being taken that no solution entered the tube. Dr. Cheadle, in a lecture, stated that he, after a year's trial of mercury solution, was convinced that this method of treatment gave better results than any other he had seen tried. Swabbing and brushing of inflamed surfaces cannot be done without traumatism. (Mr. Bernard Pitts, The Lancet, September 16, 1893, p. 682.)

[See also article "On Tracheotomy," by Mr. Bernard Pitts, at p. 348 of this volume of the *Retrospect.*]

AFFECTIONS OF THE DIGESTIVE SYSTEM.

APPENDICITIS.—Use of Salines in.

In the mild form of appendicitis, the so-called catarrhal variety, in appendicular colics, and even in slight extravasations with localised peritonitis, salines or other cathartics may be given with safety in the majority of cases, not only in the early stages, but throughout the disease. Mild cases, however, do not require the use of cathartics; they do just as well under the opium treatment, or under no treatment at all. There is danger that occasionally a mild case may become a fulminating one. In the latter condition, and in all cases marked by sudden violent onset, salines or other cathartics should not be used under any circumstances whatsoever. I have no doubt whatever that the exhibition of salines will cause, in many such instances, renewed and fatal extravasations. Not only are the contents of the intestines liquefied by the use of saline cathartics, but intestinal contractions are stimulated, and if we have a considerable perforation in an appendix of large calibre, there is nothing whatever to prevent an extravasation extensive enough to infect the whole peritoneal cavity in a very few minutes. I have seen these extravasations taking place in the abdominal cavity time and again, and I have found not only the general peritoneal cavity everywhere invaded by thin fecal matter, but I have seen it pouring out of the perforated appendix. I therefore believe that cathartics should never be used in the beginning of an attack of appendicitis—that the use of opium is far more rational if anything must be used. It is a different matter when the appendix has been removed after tying its base, or when, having drained a localised peritonitis, gauze barriers have been arranged against further extravasation; or when the disease has been going on long enough to make the adhesions strong. But not always in cases where presumably there are adhesions is it best to give cathartics until after the operation. Up to the first four or five days the adhesions which confine the septic material in a localised peritonitis are not strong, and increased pressure through the appendix caused by stimulated peristalsis may, and frequently does, rupture these adhesions and cause immediately a fatal peritonitis. The theory of intestinal drainage seems to me a good one. I always feel encouraged when after abdominal operations the bowels begin to move freely; but in mild cases there is no danger from septic absorption, and therefore no occasion for catharsis. In general infections with an open appendix, no amount of intestinal drainage can get rid of the extravasated material, and cathartics are worse than useless. In localised peritonitis there is no immediate danger from septic absorption, there is plenty of

time for surgical drainage, and cathartics may rupture the recent adhesions. Finally, with the intestinal canal intact, free catharsis is very desirable, though certain salines cause exhausting vomiting and are often ineffectual. (Dr. Richardson, Boston, U.S.A., The American Journal of the Medical Sciences, January, 1894, p. 16.)

CIRRHOSIS OF THE LIVER.

Senator (*Berl. klin. Woch.*, December 18, 1893) refers to differences of opinion as regards the various forms of this disease and sketches the history of our knowledge of it. The irritation may start (1) from the portal vein, a periportal cirrhosis resulting; (2) from the bile channels when it is due to biliary stagnation or, in addition, to the presence of inflammatory factors, such as micro-organisms; (3) from the hepatic vein, as in uncompensated cardiac lesions, this cyanotic induration is with difficulty, or not at all, distinguishable from other interstitial cirrhoses; and (4) from a perihepatitis, the inflammation spreading to the intralobular connective tissue. Some of these conditions may be combined. Anatomically it may be difficult to make out the starting point of these changes. It is almost universally admitted that in hypertrophic cirrhosis with icterus (Hanot) the intralobular connective tissue is chiefly involved, and that the liver cells are more or less maintained. Later, owing to bilary stagnation, the cells perish, and blood changes occur which cause death. The author then discusses the size of the liver, the presence or absence of icterus, ascites, and splenic enlargement. (1) The size of the liver depends on the amount and condition of the newly-formed tissue and upon the behaviour of the hepatic parenchyma. In Laennec's cirrhosis the connective tissue tends to shrink and the cells perish, hence the diminution in size. In Hanot's cirrhosis there is no destruction of the minute portal channels or of capillaries, and the connective tissue does not tend to shrink. These conditions are not always present in like degree, and fatty infiltration may occur, leading to enlargement of the organ. Thus mixed forms of cirrhosis exist. (2) Icterus depends on the integrity of the liver cells and the escape of the bile. Another necessary condition is that there should be no obstruction to the lymphatics. In Laennec's cirrhosis the conditions are not favourable to jaundice, since the hepatic cells perish, the outflow to the bile is unhindered and the lymph channels are obstructed. In Hanot's cirrhosis the opposite conditions prevail; it is difficult, however, to understand the biliary obstruction, unless it lie in the medium-sized bile channels (angiocholitis). (3) As regards ascites and venous engorgement, a chronic mesenteric perephlebitis often exists. (4) The splenic enlargement is difficult to explain as vascular

engorgement cannot alone account for it. Probably the same cause produces hyperplasia in the spleen as in the liver. The author would adopt the following classification: (1) Granular atrophy. He would add here, as subgroups, those cases in which (*a*) the liver is not diminished in size, but may be enlarged—atrophy may certainly occur subsequently; (*b*) icterus is present; this may be a chance complication. (2) Biliary cirrhosis with subsequent atrophy. The enlargement is due to biliary retention, and there is no splenic enlargement or portal obstruction, and it is more common in women. In a subgroup placed here the spleen may be found enlarged. (3) Hanot's hypertrophic cirrhoses, the rarest of all the forms. The whole course of the disease reminds one of a series of attacks of catarrhal jaundice. The enlarged spleen is important here. There are always cases which will not fall into any of these groups. The prognosis is more serious in cases with diminution in the size of the liver or with enlargement of the spleen. Perhaps it is less serious if the cause can be removed, such as obstruction by gall stones. In portal cirrhosis milk diet and potassic iodide have been recommended. Early puncture should be practised in ascites. In forms (2) and (3) high injections of oil, soap and water, or solutions of salicylates, together with massage of the liver and the occasional administration of cholagogue purgatives should be tried. Prolonged warm baths with massage, a Carlsbad course and suitable diet appear to be not without effect on the outflow of the bile. (Epitome of the British Medical Journal, January 27, 1894, p. 13.)

DILATATION OF THE STOMACH.—Dietetic Treatment in.

The object we set before ourselves must be, as I have said elsewhere, not to level down the diet to the digestive capabilities of the stomach, but to level up the digestion till it can deal efficiently with the amount of food required for the due support of the nervous system. No hard and fast rule can be laid down. A careful study of the patient's idiosyncracies will be required, and the diet must be adjusted to these. Speaking generally, such a patient will digest better food which he relishes, even if it have the reputation of being indigestible, than the most digestible and scientifically-prepared food which he eats by order, and dislikes. A very common experience is that he is tempted by a good dinner, eats largely and indiscriminately, and then, instead of a bad night and great discomfort which he thinks he has deserved, he sleeps well and feels all the better for his indiscretion. A very important point will be to disabuse the patient's mind of the idea that pain after meals necessarily indicates that the food has been unsuitable;

this will be more difficult to effect with women than with men. One day, and under one set of circumstances, anything will agree, on another day, and under different circumstances, nothing is digested. The general directions to be given will be to restrict the amount of fluid taken at meals, to eat starchy food in very moderate quantity as it is bulky and lends itself readily to fermentation, to take only one vegetable at a meal, not to eat when exhausted or especially when excited or anxious, or to eat very sparingly and simply at such times, not to jump up from meals and rush off to work of any kind. Subject to some such limitations as the above, the food should be varied so as to tempt the appetite, and the resources of good cooking may be freely employed for the same purpose. (Sir William Broadbent, British Medical Journal, December 9, 1893, p. 1268.)

Dilatation of the Stomach.—Hot Water in.

An expedient often of great service in relieving some of the effects of dilatation of the stomach, and sometimes contributing to a cure, which may perhaps best be mentioned in connection with diet, is drinking hot water. This has become a common practice, and hot water is taken with meals or after or before or between meals, for the relief of indigestion, the reduction of obesity, and various other purposes. The special object for which I have employed hot water has been the prevention of sleeplessness and nocturnal asthma. As already explained, flatulent distension is a frequent cause of inability to sleep on lying down, and especially of waking up at a given hour. In the latter case, remains of the last meal not carried on into the duodenum ferment and evolve gases. A large tumbler of very hot water sipped at bedtime stimulates the stomach to contract; almost always a certain amount of gas is expelled at once, and frequently sufficient to allow of sleep in cases where flatulence has prevented it. The contraction has the further effect of carrying any contents of the stomach forward into the small intestine, so that the copious draught of hot water washes out the stomach, and prevents the lingering behind of contents which would undergo fermentation. Sometimes the addition of carbonate of soda, with perhaps sulphocarbolate of soda, will add to the efficacy of the hot water, or a draught containing these salts with ammonia, compound tincture of chloroform, and other carminatives may be given half an hour before the hot water. Numerous cases of habitual and aggravated sleeplessness, and several of nocturnal asthma, have been effectually and permanently relieved by simple measures of this kind. Sometimes, however, the stomach is incapable of responding to the stimulus of hot water, even when aided by carminatives, and

then the discomfort and distress are aggravated. While speaking of the employment of hot water, it may be remarked that taken on an empty stomach in the morning the effect is entirely different; it is rapidly absorbed, and, passing through the tissues, acts as an eliminant. For stout and overfed people this is often very beneficial, but weak, thin, neurotic subjects are weakened and ultimately depressed by it. (Sir William Broadbent, British Medical Journal, December 9, 1893, p. 1268.)

Dilatation of the Stomach.—Medicinal Treatment.

The two main objects in the treatment of dilatation of the stomach, the prevention of gaseous distension and improvement of the contractile energy of the muscular coats, are attained more or less perfectly by many familiar mixtures and pills. I will simply indicate some which have appeared to me to be of service. When there is eructation of gas having the odour of sulphuretted hydrogen the best remedy is, according to my experience, sulphite of soda. The sulphurous acid disengaged probably combines with the sulphuretted hydrogen, and also kills the particular microphytes which disengage this gas. At any rate the foul-smelling eructations have always promptly ceased. The sodium sulphite may be given in doses of 5 to 10 grains, with carbonate of soda and nux vomica between meals. Another combination which I have frequently employed with conspicuous benefit has been sulpho-carbolate of soda in doses of 5 to 10 grains with carbonate of soda, spirit of ammonia, and gentian. It may be given in the earlier stages of a case when there is distension and discomfort at a certain interval after meals with eructations. Ginger, chloroform, or peppermint may be added to the mixture to promote the expulsion of gases. If there is gastric or intestinal catarrh, or when the evacutions are pale, phosphate of soda in half-drachm or drachm doses is a useful addition: or 1 or 2 drachms of phosphate of soda may be given early in the morning in hot water with taraxacum. Other useful remedies are creasote and carbolic acid, which are best given in pill form with strichnine. Advantage may also be taken of the bactericidal powers of mercury to arrest fermentation and the formation of ptomaines. A very useful combination is gr. $\frac{1}{24}$ each of hydrag. perchloride, or bini odid., and strichnine with ℥ j or ℥ i j of creasote or carbolic acid in a pill which may be given before or between or after meals. When arsenic is indicated as a tonic by the condition of the nervous system gr. $\frac{1}{24}$ to gr. $\frac{1}{18}$ of arsenious acid may be included. In a larger proportion of patients, careful diet on the lines indicated and persevering treatment will bring about improvement of the digestion and removal of the dilatation of the stomach; but relapses are frequent and difficult to prevent, and

cases are met with in which, from mechanical causes or from entire loss of tone and contractility in the muscular walls, no impression is made on the condition. Fortunately a resource still remains open to us in the stomach tube. (Sir William Broadbent, British Medical Journal, December 9, 1893, p. 1269.)

Dilatation of the Stomach.—Sleeplessness, and other Night Symptoms in.

After mentioning that sleeplessness is a very common effect of dilatation of the stomach, Sir William Broadbent says :—A still more common form of sleeplessness is produced by a minor degree of gastric dilatation. The patient sleeps on going to bed, but at 2, 3, or 4 a.m. is awakened, and remains awake for some hours, perhaps till morning. The explanation is that the stomach does not completely expel its contents, and in the course of the night fermentation takes place with evolution of gas, which, by aggravating the pressure on the diaphragm, disturbs and prevents sleep. The subject usually does not recognise flatulence, or discomfort arising from flatulence, as the disturbing influence, but anything which causes the eructation of gas removes the inability to sleep. It may here be remarked that flatulent distension of the stomach produces its worst effects when the patient ceases to be conscious of the flatulence as such. The discomforts arising from the presence of gas are usually due to the effects of the stomach to get rid of it, and it is when the stomach suspends these efforts and allows itself to be passively distended that the pressure and reflex effects give rise to serious trouble. The mention of the form of sleeplessness just considered leads up to the consideration of nocturnal asthma, which is the most characteristic of the reflex symptoms. This comes on at about the same time in the night, and almost certainly from the same cause—fermentation, during the first hours of sleep, of imperfectly digested food, with the formation of gaseous and irritating products. The spasm of the bronchial tubes, however, cannot be due to pressure, and must be a result of a reflex from the gastric branches of the pneumogastric to the motor fibres of the bronchiæ. The excitement or aggravation of nocturnal asthmatic paroxysms in predisposed individuals by indigestion or flatulence, late or heavy meals, or certain articles of diet, is matter of frequent observation ; when the attacks are habitual, dilatation of the stomach may be suspected as the cause. It is usually in adults at or after middle age that asthma is set up by dilatation of the stomach. There may be no bronchial catarrh whatever, or the gastric affection may precipitate the occurrence of asthma as a complication of bronchitis. The attacks are sometimes very severe. Occasionally nocturnal spasm of the larynx may be provoked in the adult by

dilatation of the stomach, and may appear to threaten life. (Sir William Broadbent, British Medical Journal, December 2, 1893, p. 1195.)

Dilatation of the Stomach. — Washing out the Stomach in.

The process of washing out the stomach is a very simple one. The fluid usually employed is a weak solution of bicarbonate of soda, about a drachm to the pint of lukewarm water ; 10 to 20 grains of sulphocarbolate of soda may be added when the contents are offensive in character. The introduction of the tube is at first disagreeable, and provokes retching and perhaps vomiting, but the patient very soon learns to pass it for himself. He should sit bolt upright in a chair, bending the head slightly forwards, and the tube should be carried boldly to the lower end of the pharynx, the patient being told to make swallowing movements, and in the intervals to breathe deeply. When the extremity has reached the stomach, sufficient liquid should be poured into the funnel to fill the tube, without which it will not act as a siphon. The tube is then pinched, and the funnel end is lowered so as to be well below the level of the stomach, when the water introduced and the contents of the viscus will flow out. The liquid should now be poured in till a sense of discomfort and fulness is produced (the amount required being noted), upon which it is made to return by again lowering the extremity of the tube. When the patient has become accustomed to the proceeding, the flushing may be repeated once or twice till the gastric contents have been completely cleared out, and any mucus clinging to the walls has been washed away. Care should be taken that the whole of the fluid introduced is withdrawn, or discomfort and sharp purging may follow. The capacity of the stomach may thus be definitely ascertained, and the amount of liquid it will hold should be carefully noted. It will usually be found to diminish, at first rapidly, later more gradually. The relief afforded by washing out the stomach is usually very striking. When irregular and intermittent action of the heart has been one of the most troublesome symptoms, this is at once, suspended, so that for a time the pulse becomes quite regular, for how long I have had no opportunity of noting, probably till after the next meal, and the heart's action becomes steadier and stronger from day to day, and the patient can take exercise with greater comfort. Sleeplessness is usually much relieved. I have not yet found it necessary to order the washing out at bedtime, but it would probably be still more efficacious in preventing disturbance of sleep if done then. Vomiting is of course put an end to ; there is no further occasion for it. Flatulent distension also is usually got rid of more easily by

eructation. But more important than the removal of these symptoms is the return of appetite and the disappearance of the loathing of food which is so common. (Sir William Broadbent, British Medical Journal, December, 1893, p. 1269.)

DYSPEPSIA.—Subgallate of Bismuth (Dermatol) in. In nearly every case of functional dyspepsia that has come under my observation within the last ten months I have begun the treatment by giving five grains of bismuth subgallate, either before or after each meal. In some cases it seems to act more favourably when given before meals, and in others its action is better if taken after eating. In studying my records and memoranda of cases, I find that the treatment by salicin has often been unsatisfactory. The proportion of unsuccessful cases was about 25 per cent.; but in some cases the effects of this remedy given alone have been remarkable. I have full records of one case of severe dyspepsia of ten years' standing that was completely relieved in a week without any return, now for more than a year. The bismuth subgallate, however, is almost a specific in cases of purely functional dyspepsia with flatulence. While I have full records of a few obstinate cases, the histories of most are merely short memoranda, and of many I have no records. Since December 8, 1892, when I began to use the bismuth subgallate, I have noted only two cases in which it gave no relief, there being no evidence of organic disease. Both of these were in hysterical women. In both I used salicin and salol; and in one, salol, salicin, naphthalin, and aristol. These were cases of long standing which had resisted treatment of every kind, and they soon passed from under my observation. I was led to use bismuth subgallate by seeing it recommended as a valuable remedy in the diarrhœa of children, acting as a disinfectant. I first employed it in a case of dyspepsia of eleven years' standing. Its action in this case was so favourable that I began to prescribe it very largely, almost invariably with remarkably satisfactory results, and I continue to use it almost daily. I have no records of many of my cases, but have been careful to note the few instances in which I have been disappointed in its effects, with certain cases in which its favourable action has been truly remarkable. I have already mentioned the two cases in which it seemed to be of no benefit. The following are a few of the cases of remarkably prompt and favourable action; —A case of alcoholism of twenty years' standing, with habitual dyspepsia for the last five or six years; bismuth subgallate gave almost instant relief; the flatulence and distress disappeared in twenty-four hours, and did not return, except in a very mild degree, when they were usually relieved by a single dose. While under other treatment for alcoholism, this condition was relieved. The

patient has taken no alcohol for several weeks and has no craving for it. A case of dyspepsia of four years' standing, with a chronic diarrhœa, was entirely relieved in five days by the use of the bismuth subgallate alone. A case of dyspepsia of more than thirty years' standing was promptly relieved by bismuth subgallate alone. In this case, every few weeks the trouble returns and is relieved by two or three doses. I am indeed no longer surprised at results from the use of this remedy which first seemed to me remarkable; and now I confidently expect prompt and favourable action. I have been in the habit of prescribing it in capsules containing five grains each, but lately have had it prepared in the form of tablets. In this latter form it is more convenient, and seems to act more favourably. (Dr. Austin Flint, New York Medical Journal, October 14, 1893, p. 426.)

GASTRIC CATARRH.—Large Doses of Bismuth in. Dr. Pick objects to the small quantities of bismuth usually administered. He believes that the frequent failure of the drug is due to that fact. With doses of 10 to 20 grains he estimates that a certain proportion does not reach the stomach for some time, being retained in the mouth, pharynx, and œsophagus. This consideration, and the fact that bismuth is almost insoluble, and the danger of poisoning therefore very remote, led him to use, in chronic gastric catarrh, much larger doses than hitherto customary, and according to a method he has adopted for the last five years. In order to free the mucous membrane from adherent mucus, the patient takes in the morning, on an empty stomach, a teaspoonful or less of Carlsbad salt dissolved in about half a pint of warm water. Half an hour later he has a teaspoonful well heaped up of the subnitrate of bismuth administered in wafer paper—in two parts, the one after the other, as the quantity is rather large to swallow at once. The gastric region is now treated to massage for a short time, in order to bring the bismuth into as close apposition to the mucous membrane as possible, and half an hour after the dose breakfast is allowed to be taken. The diet is of course duly attended to. With this method of treatment Pick has obtained very favourable results in a large number of cases. Prominent symptoms, such as a feeling of distension, tenderness in the epigastrium, and eructations, rapidly disappear, the coated tongue becomes clean, and increased appetite is established. In slight cases this has set in within eight days; in more severe cases a course of three or four weeks is necessary. No unpleasant after-effects of any description were observed.—*Berliner klinische Wochenschrift.* (New York Medical Record, January 27, 1894, p. 110.)

GASTRO-INTESTINAL ANTISEPSIS.

Dr. Henry Huchard quotes Mathieu, that gastric antisepsis is normally obtained by hydrochloric acid, and Cohn has shown that when the gastric fluid contains $\frac{70}{100}$ per mille of hydrochloric acid, lactic acid fermentation is arrested, and from $\frac{50}{100}$ to $\frac{70}{100}$ will check acetic acid fermentation. Lavage should be performed either with pure, preferably boiled water, or with salicylic acid, 2 to 3 parts; thymol, $\frac{1}{2}$ part; borate of soda, 20 parts; creolin, $\frac{1}{2}$ to 1 part per 1000. Or hydrochloric acid, or a saturated aqueous solution of boric acid, may be prescribed. Intestinal antisepsis may be obtained by calomel, in fractional doses every hour, particularly in cholera and typhoid fever. Lavage of the large intestine may be carried out by long tubes, or by special apparatus. Various solutions are used—naphthol, tincture of iodine, sulphide of carbon, chlorate of soda, nitrate of silver, tannic acid, boric acid, the latter, according to Bouchard, giving rise to irritation of the large intestine, with elimination of false membranes. The drugs used are charcoal, iodoform, camphor, calomel, salicylate of bismuth, betol, salol, benzonaphthol, and the naphthols. Naphtol irritates the stomach and increases the hydrochloric acid. In renal disease one must use with care the remedies which in decomposition give rise to salicylic acid, as salicylate of bismuth, betol, and salol. The preference is given to benzo-naphthol, which is harmless, the required amount being from 75 to 150 grains per day, administered in wafers, with about one-fourth of this amount of charcoal. This remedy passes through the stomach without change, and in the intestine is decomposed into naphthol and benzoic acid, the latter being eliminated by the kidneys as hippuric acid. Resorcin has been used in infantile diarrhœa, and in dilatation and cancer of the stomach, and lactic acid has been recommended in the green diarrhœa of children, although it succeeds equally well in the various diarrhœas of adults. Képhir has a favourable action also by reason of the lactic acid which it contains. The diet is important. Milk, preferably sterilised, often gives brilliant results.—*Revue générale de Clinique et de Thérapeutique*, 1893, No. 22, p. 338. (The American Journal of the Medical Sciences, September, 1893, p. 331.)

GASTRO-JEJUNOSTOMY.

At the Clinical Society on October 27, 1893, Mr. Bidwell read the notes of a case of gastro-jejunostomy. The patient was a man sixty-nine years of age, who was suffering from cancer of the pylorus, and the operation was undertaken to relieve the pain and vomiting. An incision was made in the left linea semilunaris, and the jejunum was united to the anterior surface of the stomach by Halstead's method for lateral intestinal anastomosis, twenty

sutures only being inserted. The patient made a rapid recovery, not vomiting once after the operation, but he died five weeks later from exhaustion and extension of the disease. Special attention was drawn to Halstead's method of suture, which was compared with the use of Senn's plates. Reference was also made to the methods of Messrs. Paul and Mayo Robson. A table of fifteen published cases, in which gastro-enterostomy had been performed in England since Mr. Jessett's paper was read before this Society last year, was appended. Eleven of these cases recovered from the operation, the remaining four dying from shock or exhaustion. Including the seventeen cases collected by Mr. Jessett, a total of thirty-two cases was obtained, with nine deaths, which was equal to a death-rate of $28\frac{1}{4}$ per cent.

The President agreed that the patient died of his malady and not from the operation. He was not keenly in favour of the use of bobbins and plates in these cases, for they favoured reflux into the stomach, and this militated against the success of the operation.

Mr. Ballance said that he had conducted a series of experiments with Mr. Edmunds in order to ascertain the best method of joining the stomach and the intestine. He referred to six cases of gastro-enterostomy which had been performed in the neighbourhood of Liverpool; the result was satisfactory for six or eight weeks, and then the opening into the stomach became closed and the old symptoms returned. As the result of his experiments, he came to the conclusion that Paul's method was decidedly the best; a bony ring was inserted uniting the jejunum with the posterior surface of the stomach, a wound being made in the anterior gastric wall to enable this to be done. The great success of this method was due to the fact that a portion of the stomach wall sloughed away, leaving a large opening in the small intestine, which in a large dog did not contract after many months. He thought that Senn's method ought to be altogether superseded by Halstead's when a lateral anastomosis was necessary.

Mr. Charters Symonds had performed this operation three times: twice for carcinoma and once for stenosis following old ulceration. In the latter case the symptoms had lasted for twenty-five years. He first connected the intestine with the stomach by Senn's plates; in five weeks the patient was as bad as ever, and on opening the stomach the aperture made at the first operation was found to be quite closed. He enlarged the opening and sutured the mucous membrane at the edges, but in spite of this it closed again. He therefore performed a third laparotomy, cut out a piece of the gastric wall as large as a half-crown piece; he then divided the jejunum, fastened the cut lower end into the hole in the gastric wall, and made an

opening further down in the jejunum, into which the lower end of the duodenum was inserted. A good recovery followed. He had since given up Senn's method in favour of lateral anastomosis by Halstead's plan.

Mr. Mansell Moullin had performed this operation on two occasions. In the first he used Senn's plates and made an opening in the intestinal wall large enough to pass two fingers through. The patient died six weeks later, and the orifice was then only large enough to admit the tip of the finger. He felt sure that later it would have closed altogether. In the other case he used the bone bobbins of Mr. Mayo Robson. There was a considerable amount of regurgitation in both cases. In the first it was considerable, but ceased when the Senn's plates were absorbed.

Mr. Battle gave some evidence in favour of Senn's method. Last year he performed a gastro-enterostomy in this way, and the patient was completely relieved of all symptoms for four months. There was no regurgitation, and death appeared to be due to exhaustion from the disease.

Mr. Warrington Haward said that these patients were usually operated on only when exhausted and when the disease was far advanced, hence it was necessary to operate rapidly; to this end Senn's plates were most useful, and he thought they should not be condemned without adequate evidence of their faults. Regurgitation depended probably not only on the condition of the stomach as regarded the malignant disease but on the position of the orifice made. The after-contraction would depend both on the condition of the stomach and on the details of the operation. He did not consider that the evidence against the plates was so far very convincing.

Mr. Pearce Gould had performed this operation in one case of cancer of the pylorus with much distension of the stomach. He opened the abdomen in the middle line and united the jejunum to the stomach as near the pylorus as the growth would admit. He made an incision into each viscus and then united the cut edges by the continuous silk suture, a few Lembert's stitches being placed on each side for fixation. The symptoms were relieved, but the patient died suddenly on the sixth day. Two questions required to be considered—viz., the part of the stomach with which it was best to make the connection, and the best method of making the union.

Mr. Bidwell, in reply, said that he did not undertake Paul's operation, because it appeared to take so much longer. It was difficult to judge as to the methods from experiments on animals, because in them no pyloric obstruction existed, and hence the artificial opening would tend to close more readily.

He fixed the intestine to the cardiac end of the stomach on account of the great extent of the pyloric growth. (The Lancet, November 4, 1893, p. 1129.)

GASTROSTOMY BY FRANK'S METHOD.

Dr. Meyer presented another patient, illustrating Frank's method of performing gastrostomy. The man is 62 years old, and has had symptoms of malignant stricture of the œsophagus since last spring. When he entered the hospital he was very low, was unable to swallow even a drop of water, and had to be put on rectal alimentation and stimulation preparatory to an operation. The operation was performed according to the recently described method of Frank, which is only suitable in cases of cancerous stricture of the œsophagus, where a permanent gastric fistula is to be established. The operation is simpler than that of Witzel. The peritoneal cavity is opened in the line of Fenger's incision, pretty close to the border of the ribs. Then the stomach is pulled forward, and a cone of about one to one and a half inches of the anterior wall is held outside and in front of the wound with the help of one or two silk slings. The base of this cone is now lined with peritonæum all around, and thus the abdominal cavity is at once closed. Now a second incision is made above the border of the ribs, about three-quarters to one inch long, only penetrating the skin ; the interposed bridge of skin is bluntly undermined, and the stomach cone pulled underneath it and out of the upper wound. There it is incised with the knife and stitched to the skin. The incision can be made very large. Still a one-half to three-quarter inch stomach-wound will later always allow the largest tube to pass with ease. Dr. Frank has done the operation of gastrostomy in this way three times. He was enabled to feed the patient through the opening at once, introducing scraped meat and bread through a large syringe. The patient does not have to wear a tube at all, yet in spite of coughing nothing oozes out. Before operating on this patient, Dr. Meyer had had an opportunity to try the method on another patient at the German Hospital, but he was extremely low, and died of heart failure the following day. On pulling the stomach forward, some trouble was experienced in holding it there, because of the resistance offered by the malignant growth at the cardia. As a consequence of the undue traction exerted upon the attachments to the skin, a part of the lower circumference of the opening in the stomach has somewhat retracted, and the upper wound, which had been made at least three-quarters of an inch above the border of the ribs, has been pulled down below this border, yet the result has been very good. The patient does not wear a tube. At the time of feeding a tube is always easily introduced. This patient

also had a full stomach when presented. More water was added, and he was made to cough hard; not a drop escaped. He believed that Frank's method of gastrostomy will become the standard operation for malignant stricture of the œsophagus, especially if the tumour is situated above the cardia. For cardia tumours of the stomach, which cannot be well pulled forward, Von Hacker's operation may be more advisable. In cases of cicatricial tubular stricture of the œsophagus, requiring a temporary gastric fistula, Witzel's operation should be preferred. (Annals of Surgery, November, 1893, p. 557.)

INTRA-ABDOMINAL ADHESIONS CAUSING COLIC.

Dr. Carl Lauenstein reports ten cases (Arch. f. Klin. Chir., 1893, xlv., 121). The diagnosis was confirmed by operation. The cases are reported in detail. In all the adherent surfaces were dissected apart. Bands and strands were extirpated. The results were nine permanent cures and one death. The statements of Lauenstein relating to diagnosis are as important as those describing the treatment. The diagnosis is difficult and is made only after a careful study of the case and exclusion of other causes. The noticeable facts thus obtained are the absence of febrile disturbance. The appearance of the patient as if a severe affection were present. The localisation of pain at definite points in the abdomen. Unfortunately, however, there are cases in which a probable diagnosis is impossible and when an explorative laparotomy is the only solution of the problem. (Boston Medical and Surgical Journal, November 3, 1893, p. 467.)

LIVER.—Examination of by Mr. Parkin's Method.

As to Mr. Parkin's method of examining the liver, I have found it to be of the greatest service. It consists in placing the patient with the trunk in a position of very considerable flexion, the weight of its upper part being taken off in order to relax thoroughly the abdominal muscles. The surgeon sits behind the patient and, passing one hand around either side, examines the details of the upper surface, anterior edge, and under surface of the liver, together with the gall-bladder, through the flaccid parietes with a facility that is remarkable to one who has never used the method before. I have over and over again seen cases, whose objective signs were apparently most obscure when examined in the ordinary supine posture, cleared up with certainty when placed in the position of considerable flexion. (Mr. Arbuthnot Lane, The Lancet, October 7, 1893, p. 875.)

PERITONITIS AND INTESTINAL NEUROSES.

In the symptoms which are associated with an actually advanced peritonitis it is quite evident that the nervous system plays a prominent part. A study of intestinal neuroses makes it easy to appreciate how important that part may be. Not only may colic and diarrhœa occur in instances in which there is no reason to suspect any actual intestinal lesion, but there are cases, more or less clearly proved to be neurotic, in which there were meteorism, fæculent vomiting, and even some signs of strangulation. I have twice opened the abdomen in cases in which there existed the phenomena of obstruction of the colon, as shown by distension of the belly, vomiting, constipation, pain, and the appearance of visible coils of intestine. In neither instance was any evidence of disease discovered within the abdomen, and in neither case did the symptoms return after the laparotomy. Allusion may also be made to those cases of chronic diarrhœa which are readily cured by chloral or bromide of potash. (Mr. Treves's Lettsomian Lectures. British Medical Journal, March 3, 1894, p. 455.)

PERITONITIS.—Causes.

It has now become evident that peritonitis depends almost entirely, if not entirely, upon infective processes, and that these agencies are concerned, directly or indirectly, in every form of the disease. There are those who maintain that there is no form of peritonitis which is not due to infection, and although the data upon which such an assertion is based are not entirely perfect, there is yet much presumptive evidence in favour of its accuracy. Indeed, the domain of non-infective peritonitis is becoming rapidly more and more dubious. In the great majority of instances peritonitis depends upon what Tavel and Lanz call "continuity infection." By this is understood the direct spreading of the infection to the peritoneum from a neighbouring tissue other than the serous membrane. Under such heading would be included peritonitis following hernia or any visceral lesion or disease capable of producing the trouble, puerperal peritonitis, most forms of pelvic peritonitis, and certain varieties of tuberculous peritonitis. It would exclude the larger number of the cases of inflammation of the serous membrane which follow accidental or operation wounds. With peritonitis due to infection by continuity must be included what is conveniently termed by the authors just named "chemical peritonitis." Here the peritoneum is invaded not so much by the micro-organisms themselves as by their chemical products. The serous membrane may absorb these products from adjacent tissues, for in a few examples of peritonitis no micro-organisms have been discovered in the exudation after careful

examination by competent observers. The following classification of peritonitis, according to its cause, appears to be justified by our present knowledge of the subject:—(1)—*Peritonitis due to Infection from the Intestine.*—Under this heading are included most cases of peritonitis associated with hernia, with intestinal obstruction, and with perforation; peritonitis due to any form of ulceration of the bowel; to enteritis; to cancerous growths of the gut and to troubles in the appendix. There will also be included peritonitis due to inflammatory changes in the biliary canals, and some forms of peritonitis following upon operation. The micro-organism which is usually found associated with these different forms of peritonitis is the bacterium coli commune. (2) *Peritonitis due to Infection from without.* — This division will include puerperal peritonitis, peritonitis consequent upon inflammatory troubles in the genital organs or in the parieties of the abdomen, and some forms of peritonitis following upon operation. The micro-organisms usually associated with the varieties considered under this heading are pyogenic cocci, and notably the streptococcus pyogenes. (3) *Peritonitis due to the Pneumococcus.* (4) *Tuberculous Peritonitis.* (5) *Peritonitis of a doubtful nature.*—Under this purposely indefinite heading it will be convenient to class (*a*) peritonitis due to irritants; (*b*) forms of the trouble reputed to depend upon rheumatism, gonorrhœa, syphilis, Bright's disease, and alcoholism; and (*c*) peritonitis met with in the newly born. (Mr. Treves's Lettsomian Lectures, British Medical Journal, February 17, 1894, p. 341.)

Peritonitis.—Drainage in.

It will be allowed by most that drainage is necessary, when either an actually noxious material is left in the peritoneal cavity, or when it is assumed that an extensive effusion will follow upon the laparotomy. Considerable differences of opinion must exist as to what constitutes, either in substance or in amount, a noxious material, and also to what extent a possible effusion is to be met by drainage. There seems little to commend the employment of a glass drainage-tube passed into the fundus of Douglas's pouch. I have ceased to use this appliance, and it would not appear that it is used with any frequency by the majority of those who are much concerned in abdominal operations. A stout rubber drainage-tube of large size and well fenestrated, passed into the midst of the area which is the most disturbed, appears in most cases to answer all reasonable purposes. It is not suited to tuberculous cases, and has in many instances been followed by an obstinate sinus. In any case, the sooner the tube can be removed the better. It must be assumed that the surgeon has no objection after the

operation to frequent, and perhaps extensive, changes in the patient's position for the purpose of assisting the process of drainage. I have myself seen no harm arise from a liberal fulfilment of this object. In certain instances, some of which I have already indicated, a gauze drain appears to be better adapted for the case than a rubber one. This drain is simply composed of a long strand of iodoform gauze about an inch and a half wide and some five to six layers thick. The great objections to the iodoform drains are these. They may induce symptoms of poisoning if very extensively employed ; they are most difficult to remove unless there be a free discharge, and their use is apt to be followed by ventral hernia. Iodoform tampons, used to close a breach in the peritoneum which cannot be closed by sutures, involve much distress in their removal, and, if left in for a few days, may become quite covered in with lymph. If retained long enough to ensure a complete occlusion of the peritoneal cavity their removal is not so difficult, but a hernia is almost inevitable. (Mr. Treves's Lettsomian Lectures, British Medical Journal, March 10, 1894, p. 521.)

Peritonitis due to Rheumatism, Gonorrhœa, &c.

Spillmann and Ganzinotty have collected fifteen recorded cases of rheumatic peritonitis, with nine deaths. In some of these cases the peritonitis appeared alone, in others in association with rheumatic troubles in the joints, or in other serous membranes. The evidence, however, upon which the pathological assumption depends is by no means satisfactory, and will not stand a critical examination. Peritonitis has been met with in association with gonorrhœa, but inasmuch as the gonococcus will not survive in the peritoneal cavity, it is to be assumed that pyogenic cocci have found a nidus in the discharge from the genitals, and have spread by extension to the peritoneum. Interesting articles on this subject have been published by Horowitz, Menge, and Wertheim. The peritonitis reputed to be due to Bright's disease, to alcoholism, and to syphilis, has not been shown to have a specific etiological existence. It would seem rather to occur under conditions which are very favourable to bacterial growth, or to be due to extension from parts which are already inflamed. The subject is fully dealt with in the monograph by Spillman and Ganzinotty. (Mr. Treves's Lettsomian Lectures, British Medical Journal, February 17, 1894, p. 344.)

Peritonitis due to the Pneumococcus.

This variety of peritonitis has not yet been so soundly demonstrated as to possess an indisputable existence. In the first place, the connection of the pneumococcus with pneumonia is a

subject about which there is much conflicting evidence. In the second place, peritonitis is a very rare sequela to pneumonia, although it is true that pneumonia is not an uncommon complication of peritonitis. The pneumococcus has been found in the peritoneum in a large number of the subjects of fatal pneumonia, and yet the serous membrane has remained sound. In 151 necropsies in which the pneumococcus was demonstrated Netter found only two cases of peritonitis. However, cases of peritonitis have been reported by Weichselbaum, Courtois-Suffit, Seavestre, Nélaton, and Galliard, in which the pneumococcus appears without doubt to have been the cause of the inflammation. The peritonitis in some of these cases was primary, and was the sole disease ; in the other instances it was secondary to ordinary pneumonia. The pneumococcus would seem to be at one time noxious to the peritoneum, and at other times to be harmless. It is difficult to localise it in the peritoneum of animals by experiment. Cultures obtained from the exudation in certain instances of peritonitis in which the pneumococcus was the only micro-organism found and injected into animals caused death from general sepsis. Morisse, whose monograph on this subject is by far the most complete, has collected eight examples of peritonitis in which, and in the associated lesions, the pneumococcus was the only micro-organism found. In seven of these there was either pneumonia or pleurisy. The exudation was purulent in five and sero-fibrinous in three. Six of the patients died, and two recovered. In both of these laparotomy had been performed. (Mr. Treves's Lettsomian Lectures, British Medical Journal, February 17, 1894, p. 344.)

Peritonitis.—Opium in.

Here the old practice appears to be the best. Give as little opium as is possible. In the early stages of acute peritonitis, and especially in the perforative forms, and in those depending upon appendix troubles, morphine in the form of a hypodermic is absolutely necessary. In the worst instances it may certainly avert death from shock. Under its influence the patient revives, and the more intense symptoms become greatly modified. Morphine should never become a feature in the routine care of peritonitis. It masks the symptoms, hinders the natural process of cure, and hampers treatment. The indication for it is actual pain, and not mere restlessness and misery. In the really septic forms but very little morphine is called for, and often none at all. Its evil effect in the after-treatment of cases of abdominal section has been amply demonstrated. In quite hopeless cases there can be no objection to its freer employment, but in other instances the administration and the dose of the drug must be sanctioned and measured by the one symptom—pain. I have

noticed that in those who are dying of general peritoneal sepsis, a greater sense of relief usually follows the hypodermic injection of strychnine than attends the use of morphine. The strychnine appears to act as a stimulant would—the patient revives for a while and feels more hopeful under its influence, his moanings cease, his miseries are less unendurable, and for the twentieth time he thinks he may get better. (Mr Treves's Lettsomian Lectures, British Medical Journal, March 10, 1894, p. 517.)

Peritonitis.—Peritonism.

In the human subject the shock attending a severe peritoneal lesion may prove fatal, and the patient may die with evidence of no important disturbance other than that wrought directly through the great nerve centres. The signs of sudden and grave disturbance of the peritoneum are pain, profound exhaustion, a distressful anxiety, pallor, a small, soft, quick pulse, cold extremities, shallow respiration, and vomiting. These phenomena vary in degree, and are not absolutely invariable. They often mark the earliest symptoms of an acute and suddenly produced peritonitis, or rather indicate the occurrence of a lesion which will lead on to peritonitis. It is interesting to note that these symptoms are in some degree common to all cases in which there has been a rude and abrupt impression made upon the nerve centres within the abdomen. It may almost be said that all quite acute troubles within the abdomen commence with the same train of symptoms. A student who is well versed in the rigidly formulated signs of abdominal lesions as given in textbooks is surprised to be told that until many hours have elapsed it is often impossible to say whether a sudden abdominal crisis is due to the perforation of a vermiform appendix, or to the bursting of a pyosalpinx, or to the strangulation of a loop of intestine, or to the passage of a gall stone. The twisting of a pedicle of an ovarian cyst has led to symptoms which have been mistaken for perityphlitis; a sudden peritoneal hemorrhage has been confused with intestinal obstruction; and the rupture of a hydatid cyst has been diagnosed as a perforation of the intestine. It is quite possible—indeed, quite usual—for these various troubles to present at first symptoms which are common to them at all, and which merely indicate that a shock has been communicated to the great abdominal nervous system. Often at first there are no differentiating symptoms. There may be features in the past history of the patient which indicate a diagnosis, but in the absence of such evidence the cautious surgeon is simply assured that some sudden emergency has occurred within the peritoneal area, and that he must wait for localising signs before he can offer a diagnosis. To these common phenomena of a crisis

within the abdomen Gubler has applied the convenient term of "peritonism." (Mr. Treves's Lettsomian Lectures, British Medical Journal, March 3, 1894, p. 455.)

Peritonitis resulting from Perforating Ulcers of the Stomach and Duodenum.

With the view of comparing the frequency of general peritonitis and limited peritoneal suppuration or subphrenic pyopneumothorax, as results of simple gastric and duodenal ulcers, I have examined the post-mortem records of St. George's Hospital, which extend over a period of more than fifty years, having been begun with the year 1841. These records contain 37 examples of perforation of simple gastric or duodenal ulcers into the general peritoneal cavity without any or with but slight attempt at limitation, 25 of which were gastric, 12 duodenal. Of the duodenal ulcers one was the acute sequel of a burn. The examples of more or less completely circumscribed peritoneal suppuration from the same cause are 24 in number, 23 of which were due to gastric perforation, one to duodenal. Nine were incompletely circumscribed, 15 completely. Many of the latter must from their origin in perforation of an air-containing viscus, and situation immediately beneath the diaphragm have been of the nature of subphrenic pyo-pneumothorax, though it is in a small proportion only that the presence of gas in the cavity is mentioned in the post-mortem description, or, as having been recognised during life, in the accompanying clinical history. As regards the stomach, this analysis of forty-eight cases of perforation into the peritoneal cavity may be taken as giving a fair representation of the chief results of such perforation, perhaps warranting a generalisation. The most important point brought out is that in a large proportion (in the present analysis nearly half) of the cases of gastric perforation, no matter in what part of the stomach the perforation may be, the extravasation and peritonitis are more or less limited at first. In most cases where general peritonitis is found at the post-mortem examination the inflammation is most intense in the subphrenic region, perhaps the more solid of the extravasated gastric contents remaining here in a cavity half closed by adhesions; while sometimes the extravasation has clearly taken place into a cavity so circumscribed that the peritonitis became generalised merely by the rupture of an adhesion some days after the perforation. In fact there are all degrees of transition between a perfectly unlimited peritonitis and a typical subphrenic pyo-pneumothorax. The practical importance of this point has been illustrated by the formation of a subphrenic collection of pus after laparotomy for general peritonitis, the site of the earliest extravasation from the stomach having probably escaped thorough cleansing at the

operation, and by the recent experience that secondary suppuration in the chest is to be feared even after the abdomen has been opened for general peritonitis of but a few hours' duration. (Dr. Lee Dickinson, British Medical Journal, February 3, 1894, p. 235.)

Peritonitis.—Rigors in.

A rigor does not often mark the commencement of peritonitis. Among 100 cases this symptom was recorded in 13 instances. In 2 of these the peritonitis had started in the appendix, in 1 it followed laparotomy, and in 10 it had its origin in the pelvis. Of the 13 patients 10 died. (Mr. Treves's Lettsomian Lectures, British Medical Journal, March 3, 1894, p. 455.)

Peritonitis.—Vomiting in.

It has been many times remarked that there is no single distinctive sign of peritonitis. Could one single symptom be selected as the one more usually present in all cases of peritonitis it would probably be vomiting. In the 100 hospital cases vomiting is noted as very slight in as many as 23 per cent. of the examples. In some of these it is described as absent. This may be to some extent explained by the strict rules of dieting which are more rigorously insisted upon at the present day, and by the fact that a dresser or nurse may not record the symptoms unless the vomiting be copious or very distressing. By very slight vomiting is implied vomiting in which the amount actually brought up is trifling. Compared with the sickness attending intestinal obstruction the vomiting in peritonitis generally may be spoken of as always slight. In a very large proportion of the cases which are carefully treated the patient will merely bring up a mouthful of fluid now and then. This is often accomplished with little effort, and many hours may elapse between the successive attacks. What is alarming and distressing in this slight degree of sickness are its persistence and the evil prognosis it suggests. The patient may be apparently improving, but there remains this periodical rejection of an ounce or so of fluid, which shows that the improvement is entirely delusive. In some of the more insidious septic cases, and in such examples of peritonitis as occur in the aged or in the subjects of advanced visceral disease, the vomiting often amounts to little more than a slight irritability of the stomach. In the instances in which the sickness is excessive, and in which the vomited matter becomes intestinal, there is something more than a mere reflex disturbance concerned. In perforative peritonitis all symptoms are usually acute and pronounced. There is intense pain, and a corresponding degree of collapse, and in the larger proportion of the cases vomiting is conspicuous. It is usually

absent in examples of perforation of the stomach. In the cases connected with typhoid fever the relation between the vomiting and the action of the bowels is notable. If all action of the bowels cease, then the vomiting tends to be marked; but if the loose motions are continued, then the sickness is for the most part slight. In the most rapid forms of perforative peritonitis an actual inflammation of the serous membrane plays but little part. Death is from shock or acute general toxæmia. In cases of peritonitis depending upon disease of the intestine, including mischief in the appendix, vomiting is not, as a rule, a pronounced symptom. In the cases of perityphlitis it is to be noted that it is least marked, as a rule, in the cases in which the bowels act with more or less regularity. In peritonitis taking its origin from the pelvic viscera or parietes, vomiting is seldom very distressing. In the acute cases the symptoms are rather those of septicæmia, and in the chronic cases the disturbance has a great disposition to remain localised. In peritonitis following upon operations or accidental wounds vomiting is rarely absent. It may not be marked, and may consist merely of an irritability of the stomach, but there it remains—a symptom which gives the greatest anxiety to the surgeon, and which no treatment appears capable of controlling. It may not be complained of by the patient; but, as already said, its gravity does not depend upon either its frequency or the amount ejected, but upon its deadly persistence. (Mr. Treves's Lettsomian Lecture, British Medical Journal, March 3, 1894, p. 455.)

[See also articles on Peritonitis, by Mr. F. Treves, at pp. 322, 328, 332, 334, of this volume of the *Retrospect.*]

PYLORIC ADHESIONS.—Abdominal Section for. At the Clinical Society, on October 13, 1893, Mr. Mayo Robson read a paper on dilatation of the stomach and severe pain dependent on pyloric adhesions, treated by abdominal section and separation of abnormal attachments, with general remarks on visceral adhesions as a cause of obscure abdominal pain. Two cases had been sent to him for operative treatment on account of extreme emaciation dependent on dilatation of the stomach and severe pain in the epigastrium and right hypochondrium. Medical treatment had been previously tried without affording relief. In both cases the same treatment—namely, separation of adhesions of the stomach and pylorus—was carried out successfully, the original cause of the adhesions being in the one case gall-stones and in the other ulceration of the stomach. The cases were brought forward because, although it was known that simple adhesions might produce serious symptoms, it was not generally recognised that dilatation of the stomach might be cured by their separation. After relating

the cases in detail, Mr. Mayo Robson remarked that in many instances of severe abdominal pain, often spoken of as neuroses, the vermiform appendix was distorted and fixed in an abnormal position; the ovaries or Fallopian tubes, or both, were displaced and fixed; and last, but not least, omental adhesions of great variety were present, producing visceral distortion; all of which were curable or relievable by a carefully planned and skilfully performed laparotomy, and that without any mutilation of viscera. He further remarked that, although it was difficult to lay down any hard-and-fast rules, yet, personally, he should feel it wise in cases of obscure abdominal pain, after medical treatment had been fully tried and failed, to open the abdomen in order to clear up the diagnosis, and then to adopt that line of treatment which seemed to be indicated. He thought that the cases were of interest, not only from a diagnostic and an etiological point of view, but also from that of treatment, for if some cases of dilated stomach, depending on pyloric distortion, could be cured by simply separating adhesions, this would be manifestly a safer and more satisfactory method than that of dilating the pylorus or performing pyloroplasty or gastro-enterostomy, in all of which the stomach had to be opened. He was afraid that it would appear as if he had included two distinct subjects in one paper—viz., dilatation of the stomach and obscure abdominal pain dependent on adhesion; but he wished to lay special stress on adhesions producing visceral disability, and their capability of cure by operation, and if he had succeeded in showing that adhesions were not as harmless as some observers would lead one to suppose his purpose had been served.

The President congratulated Mr. Mayo Robson on his cases. He remarked that if the adhesions had been the result of ulceration within the stomach they might have been the only barrier to perforation. If the adhesions were broad they could scarcely fail to become re-attached after separation, though, if they were mere threads, this was not likely to occur.

Dr. Frederick Roberts said that he had for many years urged the importance of recognising internal adhesions as the cause of obscure abdominal pain, and he had known of two or three cases of dilated stomach produced by adhesions in the neighbourhood of the pylorus. It was remarkable that, although in some cases nothing was found to account for the symptoms when the abdomen had been opened, the patients were relieved by the operation.

Dr. Hale White referred to a case in which there was dilatation of the stomach which was thought to be associated with malignant disease. At the necropsy the gall-bladder was found to be adherent to the pylorus, and the latter was thickened by chronic

inflammation. Though there had been no jaundice, the trouble seemed to have been produced by a gall-stone, which had ulcerated its way through the pylorus. Such a case, if treated early on Mr. Mayo Robson's plan, would have been a great success. In another case, after an attack of typhilitis, a woman complained of pain at the menses, referred to the region of the cæcum. It was thought that the vermiform appendix had become adherent to the right ovary, and on operation this was found to be the case. The ovary was removed, together with the vermiform appendix, and there had been no further pain.

Dr. Glover inquired whether there had been any record of pyrexia.

Mr. Pearce Gould asked whether it was easy to determine that there was no narrowing of the pylorus itself. In such a case as that which Dr. White had related, breaking down of the adhesions alone would not have effected a cure.

Mr. Mayo Robson, in reply, said that peritonitis had occurred in both cases. In many cases when adhesions were separated the viscera would return to their proper positions, and fresh adhesions were not likely to form. It was his impression in gall-stone cases that more benefit accrued from separation of adhesions than from removal of stones. The good done by some abdominal explorations was inexplicable. (The Lancet, October 21, 1893, p. 1004).

PYLORUS.—Is it Palpable?

Is the normal pylorus palpable? It may be answered, I think, in the affirmative, with certain qualifying conditions. The pylorus forms a definite ring-like muscular valve, readily to be seen and felt in the exposed organ. Whether, as has been stated, it relaxes and contracts rhythmically at definite intervals has not been fully determined, but I would remind you of the statement made by Beaumont, in his experiments on the movements of the stomach of St. Martin, that when the thermometer was placed towards the pyloric orifice it was at first firmly grasped, and then, by gentle relaxation, allowed to pass. If the stomach be exposed in a cadaver and a couple of towels laid upon it, on palpation over them the pyloric ring is readily felt. So also, I believe, it may sometimes be detected during life. Though normally covered by the anterior margin of the liver, it is freely exposed in a very considerable number of cases, and when the stomach is depressed or in a state of atony the pyloric ring is always below the edge of the liver. In persons with very thin walls, particularly in cases of enteroptosis in women, palpation in the boundary of the epigastric and umbilical regions may discover a small, transversely placed body, varying in position, with respiration which

sometimes gives the impression of a structure alternately in contraction and relaxation. In some cases it may even be rolled beneath the finger. At intervals gas is felt to bubble through it. From the pancreas, which is also sometimes palpable, it is readily distinguished by the alternate relaxation and contraction, and by the bubbling of gas through it. The condition is one of some importance, as it may lead to the suspicion of gastric cancer. (Dr. Osler, New York Medical Journal, February 17, 1894, p. 193.)

RUPTURED GASTRIC ULCER SUCCESSFULLY TREATED BY ABDOMINAL SECTION.

At the Royal Medical and Chirurgical Society, on March 13, 1894, Mr. T. H. Morse, Norwich, who was introduced by Mr. R. Barwell, read a paper on this case. The patient, a young lady, aged 20, having had symptoms of gastric ulcer was suddenly seized with pain followed by faintness and vomiting. The pain, which was of a burning character, commenced over the region of the stomach and gradually extended all over the abdomen. Abdominal section was performed nearly five hours after the commencement of symptoms; the contents of the stomach were found in the peritoneal cavity. The stomach was withdrawn and a perforation found on the anterior surface close to the cardiac orifice. The organ was washed out and the perforation closed with Lembert's sutures, the stomach was returned, the peritoneal cavity washed out, and the wound united. No food was given by the mouth for sixty hours, and at the end of three weeks the patient was quite well. The author had not up to the present seen a record of any other successful case of this kind in this country, though cases had been reported by Drs. Penrose and Dickinson, also by Mr. Gilord and Mr. Barling, and by Mr. Warrington Haward, references to which were to be found in the *British Medical Journal* of the past year.

Mr. Barwell said he had been able to find 25 cases on record of closing a rupture in the stomach wall, and there were at least 4 others. In 1 of the 25 cases there was a localised abscess close to the small curvature; this abscess was opened, and that was all that was found to be necessary. He then described Kriege's case. Mr. Barwell suggested the following points, which he thought might point the way to success: First, to operate as soon as possible; secondly, that the incision through the abdominal wall should be to the left of the middle line; thirdly, to search very thoroughly the front wall of the stomach, as in these cases the opening was for various reasons liable to be hidden by lymph, puckering, &c. He suggested that it might be advisable to introduce into the patient's stomach some coloured fluid, such as coffee, for this purpose. He could not

agree with Mr. Haward that it was necessary to cut away the margin of the ulcer before suturing the stomach. He thought that Mr. Morse had done very wisely in washing out the stomach and also in eschewing antiseptics in washing out the peritoneum. Mr. Barwell had seen very good results by washing out the peritoneum with warm distilled water in restoring patients from collapse during abdominal operations. (British Medical Journal, March 17, 1894, p. 576.)

STOMATITIS.—Peroxide of Hydrogen in.

Boennecken, in a paper on stomatitis (*Deut. med. Woch*, January 11, 1894), insists upon the importance of paying attention to the mouth during acute febrile or wasting disease; stomatitis originating in neglect of attention to the cleanliness of the teeth, gums, &c., may have a serious influence in retarding convalescence. The value of antiseptic applications is generally accepted, but the solutions of chlorate of potassium and permanganate of potassium commonly used are not sufficiently concentrated to have an antiseptic action, especially when the short time they can remain in contact with the mucous membrane is taken into consideration. Moreover, these strong solutions are apt to be painful. Boennecken strongly recommended solution of peroxide of hydrogen; it is not poisonous; does not cause pain; and has an effective antiseptic action even in solutions so weak as 2 per cent., or even less. He states that by its use fœtor is corrected in a few minutes, and that its continued use was followed by a marked improvement in the condition of the epithelium in twenty-four hours, and complete cure of even severe cases in five or six days. Leo, in the discussion which followed the reading of the paper, stated that he had also obtained very good results, but that in chronic stomatitis a solution stronger than 2 per cent. acted better. Wolters had found the peroxide in 5 to 10 per cent. solution very useful in mercurial stomatitis. Binz, however, regarded chlorate of potassium as equally effective, and observed that it probably acted in the same way as the peroxide, namely, by liberation of nascent oxygen. (Epitome of the British Medical Journal, February 10, 1894, p. 23.)

TUBERCULOUS ULCERATION OF THE ANUS.

Hartmann (*Rev. de Chir.*, January, 1894) says that tuberculous ulceration of the anus is much less common than fistulæ and tuberculous abscess. He has seen 10 cases under his own care, and to these he has added 17 published cases, and 2 others communicated to him. Among these 29 cases there were 22 men, 6 women, and 1 child. From this the affection appears to be much more common in the male sex. In 12 cases diarrhœa

was a prominent symptom. According to Hartmann the disease commences insidiously, and is first recognised owing to the presence of slight pain during defæcation. In the majority of cases the ulceration extends upwards as far as the level of the inferior extremity of the rectum ; in 2 cases only out of the 29 cited was it entirely cutaneous. In nearly half of the cases enlargement of the inguinal lymphatic glands was observed. The growth of the ulceration is very slow. After having attained a certain size they remain stationary if not treated. Hartmann recommends ablation of the ulcer with the thermo-cautery or with the galvano-cautery if the condition of the patient will admit of it. In some cases much good has followed the use of iodoform ointment after the greater part of the ulcer has been removed. If the general condition of the patient does not admit of these procedures it is recommended that general treatment for tuberculosis should be carried out. Lastly, pain may be relieved by the use of opium suppositories, the application of chloral 1 per cent., or of a mixture of subnitrate of bismuth and iodoform. In one case success was obtained by applying a $\frac{1}{8}$ per cent. solution of nitrate of silver regularly for sixteen months. (Epitome of the British Medical Journal, February 10, 1894, p. 22.)

ULCERATIVE COLITIS.

At the Pathological Society, on January 16, 1894, Dr. Tooth showed the large intestines from two cases, both women, aged respectively thirty-six and thirty-two years, who had died after severe and uncontrollable diarrhœa, which had lasted for seven weeks in one case and for ten weeks in the other. The large intestine in the first case was ulcerated more or less from one end to the other. The remaining mucous membrane was swollen, red, and spongy looking. Where ulcerated the muscular coat was bare. In the second case the ulceration was still more extensive. Large tracts of the bowel were devoid of mucous membrane, all that was left being small polypoid tags. In this case there was also extensive erosion of the caput coli, leading to the formation of a fæcal abscess in the pelvis. The microscopical examination showed inflammatory swelling of the sub-mucosa with necrosis of the mucosa and, finally, infiltration of the muscular coat by inflammatory leucocytes. Such solitary glands as remained seemed to be natural. There was no affection of the mesenteric glands. Reference was made to the preponderance of cases of the female sex, to the onset of the disease as being apparently a simple diarrhœa, the absence of sloughs, the absence of fever and rigors, and the absence of metastatic abscesses. (The Lancet, January 20, 1894, p. 152.)

AFFECTIONS OF URINARY AND GENERATIVE SYSTEMS.

ACETONURIA.—Its diagnostic significance.

Hirschfeld (*Deutsche medicin. Wochenschrift*, 1893, No. 38, p. 914) has found that upon a diet exclusively albuminous and fatty, acetone is excreted in the urine in increased amount. The addition of carbo-hydrates to the diet will prevent the development of acetonuria, *i.e.*, it leads to the destruction in the organism of the acetone formed. The fact whether or not a notable amount of the albumin of the body is destroyed has no influence upon the development of acetonuria. If large amounts of acetone are excreted in the urine diacetic acid will also be found to be present. In cases of diabetes in which the carbo-hydrates ingested are not largely burned up in the body acetone is excreted in large amounts. A diminution can be brought about by giving large amounts of carbo-hydrates or by adding glycerine to the diet. Some patients that died of diabetic coma presented progressive acetonuria in association with increasing loss of strength. No other than the diabetic forms of pathologic acetonuria is at present known. In all of the other conditions in which acetonuria has been observed (fever, carcinosis, gastric disorders) this was to be ascribed to a poverty of the diet in carbo-hydrates. In these conditions the acetonuria can be made to disappear by the administration of amylaceous or saccharine food. (Medical News, October 28, 1893, p. 494.)

ACETONURIA IN DIABETES.

Hirschfeld (*Deut. med. Woch.*, September 21, 1893) says that at present acetonuria is believed to be produced by rapid nitrogenous metabolism. He has, however, often found acetonuria present in diabetics without any increased nitrogenous metabolism. From a series of experiments on physiological acetonuria the author shows that under exclusive nitrogenous and fatty diet acetone appears in the urine, and that the addition of carbo-hydrates hinders the formation of this acetone. Morphine, opium, sodic salicylate, alcohol had no effect upon the acetonuria, whereas glycerine had a marked one. The author says that the acetonuria associated with gastric disease, carcinoma, and fevers is in no sense a special form. In slight cases of diabetes the same results are obtained as above; but in severe cases acetonuria persists in spite of the carbo-hydrates, and only large quantities of the latter have any effect. Thus the carbo-hydrates which are not used up in the body have lost their destroying action on acetone. Up to now the presence of acetone in the urine of diabetes has not been looked upon as having any prognostic significance, but only that of aceto-acetic acid, as shown by

Gerhardt's perchloride of iron test. This so-called "diaceturia" appears only when acetone is abundant. The presence of acetone may thus be important, but its amount must be ascertained. Coma is known to appear after a rigid diet with exclusion of carbo-hydrates, that is, when acetone is abundant. The author records three cases of diabetes, two of which died of coma with gradually increasing acetonuria; the third case improved as the acetone diminished. With increasing acetonuria the strength of the patient decreases and the danger of coma is nearer. The more difficult the assimilation of carbo-hydrates the greater the excretion of acetone, but these events do not run parallel. It is probable that with diminished excretion of acetone the substances concerned in producing coma are destroyed. In the presence of considerable acetonuria a strict diet should not be enforced, but carbo-hydrates allowed. With on-coming coma it may be impossible to give them, and then glycerine—100 to 150 g. in the day in tea or coffee—might be useful from its above-named properties. Opium, morphine, sodic salicylate, sodic bicarbonate, antipyrin have not been proved, either clinically or experimentally, to have any acetone-destroying effect. (Epitome of the British Medical Journal, October 14, 1893, p. 61.)

ACUTE NEPHRITIS.—Treatment.

The disease has a tendency to recovery qualified, especially when scarlatinal, by a tendency to fibrosis. To assist recovery warmth in bed and liquid diet are essential. The food should consist not only of milk, but should also comprise thin beef-tea or light animal broths. Water and aqueous drinks should be given freely; alcohol prohibited. Bread and butter may be generally permitted, and farinaceous food in some variety may be early introduced. After a calomel purge it will often suffice to give a little alkalising saline, such as potassio-tartrate of soda (a great favourite with me) or tartrate or citrate of potash. These are laxative and mildly diuretic, and beneficially reduce the acidity of the urine, which in such cases is apt to be excessive. If anything more is needed to keep the bowels moderately loose a morning potion of sulphate of magnesia should be superadded. Digitalis ought to be given only if there is dropsy or if the urine is very scanty. With the exception of digitalis and such mild salines as have been mentioned the whole class of diuretics may be avoided as either useless or injurious. Pre-eminent among the latter are cantharides. Though the urine may contain blood it is seldom advisable to give medicines with the object of stopping the discharge, which depletes the kidney, generally to its advantage. If the loss is profuse and persistent, and there is much anæmia with it, some astringent form of iron, the sulphate or the perchloride, may be

given with an aperient, such as a little sulphate of magnesia, or in an extreme case iron alum in the same company. (Dr. Dickinson, The Lancet, February 10, 1894, p. 317.)

ALBUMINURIA.—Treatment of Dropsy in.

Nature's cure for renal dropsy is hypertrophy of the heart. This may be presumed to act by way of the veins ; the increased suction power of the thickened left ventricle must draw upon these channels and so pump out the water-logged tissues, while the hypertrophy of the right ventricle, slight but real, must likewise help on the venous circulation. Renal dropsy, therefore, tends to recovery, but the process is slow and needs to be expedited. Œdema of the legs, whether renal or cardiac, is relieved by posture—not merely moved, but removed. Beyond this, measures of two kinds tend to benefit renal dropsy—those which lessen the contents of the vessels, and those which increase the force of the heart. Digitalis, I think, is almost invariably indicated ; it probably acts upon the heart and vessels in the first place, and upon the secretion of the kidneys only secondarily. I do not think that the way this drug acts in renal dropsy is entirely clear ; it is known to increase the contractile force of the left ventricle, but does it increase its expansile force ? It is not known that it does so. No doubt the increase in the contractile force of the right ventricle must tend to relieve dropsy, but beyond that one does not see very clearly. However, whatever obscurity there may be about the *modus operandi* there is no uncertainty as to the beneficial result. Most reputed diuretics are useless and some, like cantharides, are injurious. I have learned to distrust and avoid the whole class, with the reservation of digitalis and the vegetable salts of potash, which, in addition to their other properties, are slightly diuretic. Hydragogue purgatives and hot-air baths have their use, and, I may say also, their abuse. Depletion may be carried too far and a condition of anæmia maintained by which dropsy is promoted rather than relieved. Exhausting measures ought, therefore, to be used with moderation and counterbalanced, according to circumstances, by food and iron. Among the purgatives which are useful in such cases the mercurials are not to be rigidly excluded, though they ought to be given seldom and in small doses. In considering the benefit to be derived from purgation and diaphoresis in renal dropsy it is not to be forgotten that the initial causes of this form of the disease are probably the contamination of the blood and its altered relation to the capillaries, and the circumstance that evacuation tends to carry off the peccant materials. The abdomen may be tapped with safety, by which means not only it, but the legs will be relieved ; punctures of the legs by any process, whether with tubes or needles, should be avoided as

being full of danger, however apparently trivial the operation. (Dr. Dickinson, The Lancet, February 10, 1894, p. 319.)

[See also article by Dr. W. Howship Dickinson, "On the Treatment of Granular Kidney," at p. 249 of this volume of the *Retrospect.*]

BRIGHT'S DISEASE.—Milk Diet in.

At the Medical Society, on March 19, 1894, Dr. Ralfe read a paper on "Milk Diet in Bright's Disease." He remarked that the exclusive use of milk as a diet in Bright's disease in all its stages had found considerable acceptance with the profession generally, though, however, recently its utility had been questioned with regard to the more chronic stages, and some observers had even gone so far as not only to recommend a more stimulating but even a full ordinary diet in such cases. The fact, however, that milk, either exclusively or at least in considerable quantities, had proved beneficial in a large number of cases was incontestable, and a method of diet which could produce such evidence must not be lightly abandoned without an investigation into the causes of failure in any given instance. Dr. Ralfe in the present paper gave the result of observations made by him of the effect of a milk diet on the secretion of urine as regarded its quantity, amount of solids, and excretion of urea and albumen in patients suffering from nephritis in its different stages, such as ordinary acute nephritis; chronic nephritis with active hypertrophy of the left ventricle, with strong pulse tension; chronic nephritis, with failing cardiac action and degenerated vessels; chronic renal cirrhosis from venous congestion, the result of valvular disease of the heart; and nephritis complicated with lardaceous disease. The patients at first, for one week, were placed on an ordinary diet (containing four ounces of meat), and afterwards for two or three weeks kept on milk, and then again for a week resumed the ordinary diet. The results were given in charts showing the weekly averages of the quantity of urine passed, the solids, the urea, and albumen. With regard to acute nephritis, it was found that the effect of a milk diet was to increase the quantity of urine, the amount of solids, and the urea, and to diminish the albumen, all which was reversed when a more stimulating diet was resumed. In the chronic cases the milk diet had not such a marked diuretic effect on the amount of urine secreted, but caused a decided fall in the quantity of solids and of urea. The effect on the amount of albumen was varied; in nephritis associated with high pulse tension it was certainly lessened, but in nephritis with failing cardiac action and degenerated vessels very little change occurred. Besides these observations on the urine, Dr. Ralfe made allusion to the general effect on the patient of the different diets as

regarded nutrition and action on the vascular system. As a rule the milk diet was well borne by the acute cases, and they certainly improved under its use. On the other hand, the chronic cases generally disliked milk from the first, they did not improve under it, and it certainly increased the uræmic symptoms. It had, however, a considerable influence in reducing the tension of the pulse, which rose again on the resumption of a diet containing meat. This raising of the pulse tension was an important objection to the use of a too stimulating diet in cases in which there was a strongly acting vascular system, for fear of its inducing cerebral hemorrhage—a risk as great, Dr. Ralfe thought, as of inducing uræmia by too low a diet. The exclusive use of milk should be confined to acute cases alone, and for a time perhaps to chronic cases, when it might be necessary to reduce the action of the vascular system. In cases with a failing heart and degenerated vessels a more stimulating diet was called for, but he was of opinion that its effect should be carefully watched, and it should only be given in small quantities at a time. (The Lancet, March 24, 1894, p. 742.)

DIABETES.—Bread Substitutes in.

Dr. Saundby, of Birmingham, writing on bread substitutes in diabetes, makes the following suggestions. He has almost entirely given up the use of gluten bread, because, he says :— (1) The best contains nearly 30 per cent. of starch; (2) it is very unpalatable; (3) it is very expensive. These are sufficient reasons against the best gluten bread, and it is unnecessary to urge objections to stuff not uncommonly sold under this name, which is merely coarse brown bread containing a considerable excess of bran. From a chemical point of view the best gluten bread is as injurious as half its weight of ordinary wheaten bread, or to put it another way, it is as bad for the patient to eat eight ounces of gluten bread as four ounces of wheaten bread. Professor Ebstein has lately written a good deal to recommend the use of aleuronat, which is a patent name for a gluten flour obtained as a by-product in a starch factory and sold very cheaply. There are many cases of diabetes in which it is absolutely necessary to stop the supply of starch as well as of sugar, and where it is important to use a bread substitute which contains no starch at all. For this purpose he now recommends Clark's starchless biscuits. They are very well made, palatable, and free from starch. Dr. Saundby gives the following receipt for almond cakes which can be prepared at a moderate cost. One pound of ground almonds, four eggs, two tablespoonfuls of milk, a pinch of salt; beat up the eggs and stir in the almond flour ; divide in twelve flat tins ; bake in a moderate oven for about forty-five minutes. He also

reminds us that a very palatable pudding which diabetics very much appreciate, and which is absolutely free from anything hurtful to them, can be prepared from Iceland moss. This should be well soaked in water for about three hours, then boiled in milk for three-quarters of an hour, strained, sweetened with saccharin or glycerine, poured into a mould and allowed to go cold. Every addition to the dietary of a diabetic is an advantage, and he is right to draw attention to one which is probably often overlooked.—*The Birmingham Med. Review*, xxxiii., No. 77, p. 275, 1893. (The Practitioner, December, 1893, p. 448.)

Diabetes.—Eye Symptoms in.

In the *Internationale Klinische Rundschau*, Professor L. Mauthner gives his experience of eye symptoms occurring in diabetic patients, the paper being one which has its importance for the general practitioner as well as for the specialist. While residing at Karlsbad, Mauthner had the opportunity of examining a large number of sufferers from diabetes who were also staying at this health resort, and is of opinion that lesions of the eye attributable to this disease are not by any means so frequent as has been supposed to be the case. Among the diabetics over 50 years of age he found a few instances of striæ in the lens, but these were to be regarded rather as senile changes than as due to constitutional disease. He does not think that it is the presence of sugar in the interior of the eye which leads to disease of that organ—in particular, to cataract; it is only in a very small percentage that cataract is the result of loss of fluids. On the other hand, a general disturbance of nutrition is induced which causes fragility of the vessel walls and consequent hemorrhages. These hemorrhages may (for present purposes) be divided into two groups, viz., intra-orbital and intra-cranial. To the first class belong hemorrhages into or under the conjunctiva, retina, choroid, vitreous humour, and optic nerve, as well as hemorrhagic glaucoma. To the second belong hemorrhages into the radiations or the nuclei of the optic motor, or sensory nerves, producing hemianopsia, homonymous defects of the field of vision, colour blindness, paralysis of accommodation, paralysis of third, fourth, sixth, and facial nerves, and neuro-paralytic keratitis. The percentage of these hemorrhages in diabetes is small, it is true, but it is of great importance to recognise the fact that the severity of the case affords no indication of the condition of the vessel walls. The significance of such diabetic symptoms lies, according to Mauthner, neither in the large amount nor, indeed, in the presence of sugar in the urine, but in the formation of the "toxines." At any epoch in a given case these may be produced in such quantity that, while

they do not prejudice the nutritive capabilities of the blood as a whole, yet by deposition in some organ or other they produce therein local inflammatory processes, and to this condition the visual organs seem to possess a peculiar liability. It seems almost to follow from this that Mauthner is not in favour of a very strict anti-diabetic diet for his patients; he permits moderate quantities of carbohydrates to be taken, and in no case does he allow "carbohydrate hunger" to exist. The formation of diabetes-toxines in small quantities is much less dangerous than the presence of albumin-toxines. The diabetic marasmus which may develop with such rapidity acts on sight in two directions—on the lens, and on the accommodation apparatus. The true diabetic cataract, which is characterised by its rapid development, not merely in young, but even in elderly patients, belongs to the advanced stages of diabetes, and is either produced simply by the loss of fluid or forms a local manifestation of a general disorder of nutrition, which latter also, but only in severe cases, produces weakness of accommodation and insufficiency of the internal recti [? rather, of convergence.—*Tr.*]. The case of total paralysis of accommodation (cycloplegia) is quite different, for this is brought about by a hemorrhage in the accommodation nucleus. The diabetes which results from an injury to the central nervous system does not directly affect visual organs, but the accompanying cerebral condition may induce visual symptoms directly. In this manner the centres and conducting fibres of the optic system may be attacked, and hemianopsia, unilateral blindness with defect in the temporal field of the other eye, or complete bilateral blindness arise. Thus also there may be found paralysis of eye muscles, whether cortical, nuclear, or fascicular, from implication of the various parts concerned. In a similar way, the injury to an area in the brain may produce by indirect influence (*Fernwirkung*) neuritis, neuro-retinitis, or papillitis, as it can lead to diabetes, and this to eye affections not directly connected with the injury; all those eye affections which in cerebral diabetes are produced directly by the cerebral lesion can also arise, as secondary manifestations of constitutional diabetes. In regard to diabetic amblyopia, Mauthner's experience leads him to conclude that such a diagnosis can only be established when toxic amblyopia can be absolutely excluded; and since intoxication amblyopia may be brought about by the debilitating influence of the presence of diabetes, the use of tobacco, as well as of even such wines as are not sweet, should be kept well regulated. What appears, then, at first sight to be a diabetic amblyopia is not in every case to be regarded as a sign of rapidly approaching death. The majority of such cases are, he believes, really toxic amblyopia; he says he has discovered

not a single published case in which it is definitely stated that the patient was an abstainer from tobacco and alcohol. Out of five cases which he saw, two were cured, not by anti-diabetic diet, but by abstinence from tobacco ; in one case cure followed, although the diabetic condition was at the same time getting worse ; in one case the amblyopia was cured by abstinence, was not produced again when the patient passed through a period of exacerbation of his diabetic symptoms, but reappeared when, these symptoms having completely passed off, the patient again began to "indulge." (Dr. W. G. Sym's Periscope, Edinburgh Journal, December, 1893, p. 567.)

Diabetes.—The Knee-Jerk in.

Grube (*Neurol. Centralbl.*, November 15, 1893) has investigated the condition of the knee-jerk in 184 cases of diabetes mellitus. In general he has used the method recommended by Buzzard, coupled with Jendrassik's reinforcing device. As only one examination was made in 56 of the cases, he excludes those from consideration. Of the 128 remaining cases, the knee-jerk was normal in 113 and increased in 2. In the latter cases the patients were suffering from a severe form of diabetes ; their urine contained large quantities of sugar and acetone, and they were too feeble to walk. Under treatment these patients improved ; their knee-jerk then became normal. In 4 cases of severe diabetes the knee-jerk was absent or greatly diminished. One of these patients had bilateral neuritis with trophic derangements. The phenomenon was absent in 9 slight cases. Excluding 3 of these—because two of the patients were tabetic and the third was too obese to admit of satisfactory examination —there were only 10 patients (7·6 per cent.) in whom the knee-jerk was abolished or much reduced. The author contrasts his results with those recorded by other writers. Bouchard, who first described loss of knee-jerk in diabetes, found the defect in 36·9 per cent. of cases, Williamson in 50 per cent. Grube concludes that absence of knee-jerk has no prognostic significance in diabetes ; in diabetic coma he has seen brisk reaction to percussion of the patellar tendon. (Epitome of the British Medical Journal, December 16, 1893, p. 97.)

DIABETES MELLITUS.—Some Skin Diseases in.

Several eruptions play an important part in relation to diseases of the kidney and urinary disorders. The most familiar of these are boils and carbuncles. Although these lesions are directly due to the presence of the micro-organisms staphylococcus aureus and albus, as is well known, they find an extremely congenial soil in persons suffering from diabetes mellitus, and if a patient comes to you with boils or carbuncles

it would be culpable neglect not to examine the urine whatever the patient might complain of. Even if there is no sugar in the urine they should suggest an inquiry as to external causes, and there is no more prolific source of boils, carbuncles and abscesses than sewer-gas poisoning ; the drains and water supply, therefore, should engage attention. Eczema and pruritus of the genitalia are also frequent and familiar concomitants of diabetes ; urticarial and erythematous eruptions are not uncommon but less significant; but there is one affection which, although rare, is of considerable importance because it occurs in persons whom you would not *primâ facie* suspect of glycosuria while a knowledge of this eruption would at once put you on the track. Let me give you a case in point :— A gentleman, aged 38, was sent to me for the diagnosis of an eruption which had appeared on the buttocks two months before I saw him, and soon after came out on the front of the arm, and then on the elbows and knees, and the lesions had gradually increased in number. The eruption consisted of papules, from a hemp seed to a pea in size, with a red base and yellow apex, and there were no subjective symptoms ; the patient looked well and complained of nothing, only when questioned he admitted some lassitude and that he was more easily tired during the last nine months than he had been formerly. Recognising that the eruption was that known as xanthoma diabeticorum, I at once examined the urine and found sugar, which subsequently was shown to amount to 18 grains to the ounce, while he passed about 70 ounces of urine per diem. With suitable dietary and other treatment the sugar and the eruption both disappeared. (Dr. Radcliffe Crocker, New York Medical Record, October 21, 1893, p. 513.)

DIABETIC INTOXICATION.—Treatment.

Dr. Henri Huchard finds three indications to meet : (1) To prevent the formation of toxic substances ; (2) to favour their elimination ; (3) to neutralise them chemically, for opposing the grave accidents as in the period of coma. The diabetic intoxication is the result of incomplete combustion of glucose, resulting in acids which are toxic for the organism and a diminished alkalinity of the blood, poisonous of itself. In diabetic coma, with immediate necessity for the introduction of alkalies into the economy, but three routes are open : (1) Intravenous saline injections of sulphate, phosphate, bicarbonate or chloride of sodium in solution ; these, intended to neutralise the acids and favour the elimination, have never cured diabetic coma. (2) Subcutaneous saline injections, the hypodermoclysis of Cantani, using chloride of sodium, can dilute the toxins and favour their elimination by increasing vascular tension and

urinary secretion, but as yet it has not been put to use in diabetic coma. (3) Transfusion of blood has been used by Lecorché in three cases of coma, and death, without regaining of consciousness, took place. Bleeding, and that extensively, should be strongly recommended in diabetic coma. In preventing the coma the anti-diabetic medication of Mialhe, the use of the alkalies, is serviceable. The bicarbonate of soda from 75 grains to three times that quantity per day is the best preventive of this condition. Fatigue, mental emotions, long journeys, and violent exercise should be avoided. Loss of fluids, as profuse sweatings, diarrhœas, injections of pilocarpine, the use of opiates, must be prevented. An exclusive meat diet "may cure the diabetes but aggravate the diabetic." Even an excessive quantity of meats and fats may precipitate a coma, as Ebstein has shown. It is also necessary to prevent abnormal fermentations in the alimentary canal. To eliminate the toxic products it is well to prescribe the purgatives, as calomel, the salines, and diuretics. Particularly in diabetic intoxication is it necessary to prevent cardiac weakness by digitalis or digitalin, or, if fatty degeneration is suspected, by hypodermatic injections of caffeine. The period of diabetic coma offers but slight hope for cure; in avoiding this condition, and in carrying the patient to a successful result, two points are essential—to foresee and to prevent.—*Revue gén. de Clinique et de Thérapeutique*, 1893, No. 46, p. 722. (The American Journal of the Medical Sciences, March, 1894, p. 319.)

HYDRONEPHROSIS.—Nephrectomy for.

At the Medical Society, on November 13, 1893, Mr. Bland Sutton read a paper on "Nephrectomy for Hydronephrosis." His object was to demonstrate the comparative safety of this operation when carried out on certain definite lines. By far the greater number of hydronephroses were due to some easily demonstrable obstruction in the urethra, bladder, ureter, or pelvis of the kidney, the obstruction being either incomplete or, if complete, only temporary. If there were complete and permanent plugging of the ureter the kidney would rapidly atrophy. In many of the largest hydronephroses no obstruction could be demonstrated, and abnormal movements in the kidney producing kinking of the ureter could not explain all cases. Though all hydronephroses large enough to form a detectable tumour intermitted, yet he thought that the phrase "intermitting hydronephrosis" should be exclusively reserved for those cases in which great diminution or temporary disappearance of the swelling occurred. In an interesting case of a woman forty-two years of age, the subject of bilateral hydronephrosis, the cysts used to intermit alternately, and he actually witnessed

the phenomenon of intermission while performing abdominal section on her. He gave particulars of another case in a woman twenty-six years of age, in which intermission occurred in a unilateral hydronephrosis, and the occasional disappearance of the tumour gave rise to a good deal of perplexity. After exploring through a median incision he removed the hydronephrosis, which had a capacity of nearly one hundred ounces, through a wound in the loin. In this case the pathological difficulties were even greater than were those of the diagnosis, for there was no evidence whatever to explain the cause of the temporary obstruction. He showed another example of unilateral hydronephrosis in which the closest examination of the ureter and bladder failed to detect an obstruction, and in which during life there were no symptoms indicating renal disease. When hydronephrosis was bilateral the signs were often in abeyance until the amount of renal capital was reduced to the minimum capable of meeting the ordinary demands of the individual, and directly there was an extra call the low amount of available renal tissue became alarmingly manifest, and the patient died. He gave particulars of a case of bilateral hydronephrosis in a man twenty-six years of age which illustrated this. One of the greatest dangers in hydronephrosis was suppuration. This condition he distinguished from pyonephrosis, in which the lesion was inflammatory from the outset, and he compared it to a suppurating ovarian cyst; it required similar treatment and furnished incomparably better results. In many cases the hydronephrosis became septic by way of the ureter; but another important source was the colon, the ascending or descending portion of which often lay in intimate relation with a hydronephrosis sac, the walls being so thin as to permit of osmosis taking place. Under these conditions the attack was apt to be confounded with typhoid fever, and he quoted a case occurring in a young Frenchwoman in illustration of this. Having discussed the diagnosis of these cases and condemned the resort to aspiration for ascertaining the nature of any abdominal tumour, Mr. Sutton concluded his paper with some practical remarks on treatment. With a unilateral hydronephrosis, the other gland being in good condition and working properly, the disorganised kidney should be removed, especially if it had suppurated. Where both kidneys were hydronephrotic, incision, and drainage constituted the wiser course. In performing nephrectomy he first opened the peritoneal cavity by an incision in the linea semilunaris, ascertaining the nature of the tumour and the condition of the opposite kidney; then he closed the abdominal wound and removed the kidney through an incision in the ileo-costal space, following closely the rules laid down by Mr. Henry Morris. He did not begin to detach the kidney

until the finger was well within the capsule ; in ligaturing the pedicle he kept close to the kidney, and he deprecated the use of large forceps to clamp the pedicle before securing the ligature. (The Lancet, November 18, 1893, p. 1250.)

LARDACEOUS DISEASE OF THE KIDNEY.—Treatment.

There is much to suggest potash as remedial. Apart from syphilis, the only ascertained cause for the disorder is suppuration, a process which necessarily entails a loss of potash. The relation of the discharge to the deposit is so direct as to suggest some such arithmetic as this : take pus from blood, and the lardaceous matter remains. This matter is distinguished from the normal constituents of the body by its deficiency in potash and by its ready solubility in alkalies. The suggestion cannot fail to present itself that the substance is deposited in consequence of a deficiency in the blood of the normal alkaline solvent; but there are in the living body complications which the test-tube cannot reveal, and therapeutics based only on chemistry are apt to miss their mark. The loss of pus which causes the lardaceous deposition is not only a loss of potash but of the white corpuscles in which it is contained ; the loss of the organisms cannot be ignored, nor can potash by itself replace them. Then, again, it has to be considered that, however readily the lardaceous material can be eliminated from an organ by liquor potassæ after death, it is not quite so easy to get that reagent to bear upon the tissue during life. The material is dissolved only by the caustic alkalies, not by their salts, and the action of the blood upon these alkalies has to be considered. Nevertheless, I think it is wise, and I am sure it is harmless, to give a little liquor potassæ upon an empty stomach when suppuration is present ; but general restorative treatment is what ought to be mainly relied upon—viz., a liberal diet and sea air, with iron and quinine and cod-liver oil. I have seen more good result from a sojourn at Margate than at any other place. When the lardaceous condition is due to syphilis the benefit produced by the long-continued use of iodide of potassium, possibly conjoined with iodide of iron, is remarkable. In order to obtain the greatest good from such medicines they should be given for years ; I often propose two years as the duration of the course and have many times continued it for longer than this with advantage. (Dr. Dickinson, The Lancet, February 10, 1894, p. 319.)

RENAL TUBERCULOSIS.

Tuffier (*Annales des Malad. des. Org. Génito-urin.*, 1893, No. 7, p. 495) points out that, in addition to hydronephrosis of tuberculous origin, there is also a variety of renal tuberculosis

characterised by paroxysmal pain indistinguishable from that of nephritic colic, without detectable enlargement of the kidney and without pyuria or hæmaturia, although it may be possible to find tubercle bacilli in the urine. Besides this form of renal tuberculosis there is another, characterised by the occurrence of hæmaturia, and corresponding to the form of pulmonary tuberculosis attended with hæmoptysis. A case is reported in a woman, 42 years old, of good family and personal history, who, in September, 1888, after a long walk, not especially attended with fatigue, was suddenly seized with hæmaturia. There was no pain, but a sense of burning referred to the bladder. The urine soon resumed its normal appearance. Thereafter, the hæmaturia was repeated from time to time, after intervals of varying duration in which the urine appeared quite normal. The woman became extremely anæmic, almost cachectic in appearance, and weakness became marked. The urine examined in an interval between two attacks presented no abnormality. The physical examination was facilitated by the marked emaciation, but it was not possible to detect any enlargement or lesion of kidney, ureter, or bladder. The manipulation was unattended with pain. The patient at this time would not submit to a cystoscopic examination. Examination of heart, lungs, and other viscera failed to disclose the existence of organic disease. Upon the strength of the evidence it was concluded that there must be a neoplasm of the kidney or of the bladder, the character of the hæmaturia pointing to the bladder. Accordingly the bladder was opened through a hypogastric incision and explored, but no lesion was found. The wound of operation closed readily, and without untoward event; but after the lapse of two months there developed in the course of the cicatrix a small spot of fungous ulceration, of the tuberculous nature of which there was no doubt. Shortly afterward hæmaturia recurred, and now a diagnosis of renal tuberculosis was ventured. The right kidney appeared to be a little the larger, but the left was slightly painful. Cystoscopic examination yielded a negative result; for the patient was greatly agitated, and, perhaps as a result of spasm, not a drop of blood escaped from either ureter during a period of ten minutes. A second examination, however, showed clearly that the blood came through the left ureter, while the secretion of the right kidney appeared to be normal. In view of the gravity of the situation, it was determined to operate at once and incise and scrape the kidney or excise it, according to the conditions found. No change was found in the tissues surrounding the kidney. The organ itself was not enlarged, but within its parenchyma several fluctuating areas of softening were found. No enlargement of adjacent lymphatic glands was detected.

The organ was removed. There was no surgical complication, and five weeks after the operation the patient appeared to be perfectly well. Tubercle bacilli were found in the contents of the abscesses. There was, however, no communication with pelvis or ureter. (The American Journal of the Medical Sciences, October, 1893, p. 475.)

RETENTION OF URINE FOLLOWING OPERATIONS.

Guépin (*Gaz. des Hôpitaux*, 1893, No. 33) calls attention to the brief mention of this complication in the text-books, although it is of very frequent occurrence. It occurs at all ages after puberty, but, according to the author, never happens in children under 15 years of age. There are two clearly defined clinical forms, an indolent and a painful. The first occurs in those having healthy urinary organs, and the latter in patients with diseased organs. The duration of the retention is very variable. The indolent form usually disappears after the use of the catheter; the painful form may last several days. In explanation of retention of urine many causes are mentioned, *e.g.*, swelling of the urethra, the dressing, the pain of the wound, paresis of the abdominal muscles, narcotics, &c. Guépin gives the three following factors:—(*a*) Spasm of the urethra, particularly of the bulbous portion; (*b*) paralysis of the bladder; (*c*) abnormal position of the patient, *e.g.*, enforced dorsal decubitus, in which position many persons cannot urinate at all. In the treatment the upright position should be assumed; this failing, a hot enema may be administered. If this is unsuccessful, a catheter should be employed, a soft one being preferable. (The American Journal of the Medical Sciences, November, 1893, p. 606.)

SPIEGLER'S TEST FOR ALBUMEN.

Spiegler has introduced a very delicate test of minute traces of albumen in urine. He states that by its means he can detect 1 part of albumen in 225,000 parts of urine. The test solution is composed as follows:—Hyd. perchlor., 8 grammes; acid. tartaric., 4 grammes; sugar, 20 grammes; distilled water, 200 grammes. The sugar serves to raise the specific gravity of the liquid to 1060, which is higher than that of nearly all urines. It is used by placing some in a test tube, and gently adding a little of the urine to be tested. If albumen is present a ring will form at the junction of the two liquids. Gurrieri (Reprint from the *Riforma Medica*, September, 1893) has made some observations on this reaction, and has ascertained the fact that the reaction is incapable of detecting even large quantities of either egg- or serum-albumen, save in the presence of chlorides or hydrochloric acid, the reaction being more marked in proportion to the amount of chlorides present. The same is true

for albuminous urine if the chlorides are removed by previous addition of silver nitrate and subsequent removal of the silver salt. In the rare cases, therefore, in which urine is free from chlorides, the reaction as it stands will not take place, and it would be necessary to add a trace of chloride. A minute quantity of urine, added to a solution of pure albumen of any kind, was found to be sufficient to ensure the success of the test, by virtue of the chlorides contained in it. In order, therefore, to make the original test unfailing the author suggests that it would be as well to add a small amount of chloride to the test solution, which then becomes an exceedingly useful one for clinical purposes. (Epitome of the British Medical Journal, November 11, 1893, p. 77.)

STRICTURE OF THE URETHRA.—Divulsion of. Scudder (*Journ. of Cut. and Gen. Urin. Dis.*, October, 1893) reports 28 cases of divulsion of urethral stricture, and gives a critical study of 404 cases. Nearly all the 28 were emergency cases, the patients suffering from acute retention, and having a very tight stricture admitting only a filiform guide. The physical condition in most cases was poor. No special antiseptic precautions beyond cleanliness were adopted. The Bigelow divulsor was used in all the cases. The author maintains that this is a safe, simple and efficient instrument. The mortality in the series was about 1·9 per cent. Considering the character of the cases, the physical condition of the patients, and the fact that the cases were not selected, this mortality is low, and warrants the belief that in properly selected cases the mortality would be still lower. After divulsion the amount of constitutional disturbance was comparatively slight, even in these cases. The urgency of the symptoms was so great as to preclude preliminary preparation. With recent methods of urinary asepsis and urethral antisepsis even less constitutional disturbance should follow. Taking all things into consideration, the permanence of the results in this particular series seems fairly satisfactory. In many instances divulsion probably increases the cicatricial tissue, surrounding the urethra, because the rupture sometimes occurs in stricture tissue, and extends into healthy tissue. The operation with the Bigelow divulsor is regarded by those familiar with it as a method at once accurate, easy, safe, and almost bloodless. In firm tough strictures divulsion is contra-indicated. Those soft strictures firm enough to cause retention of urine, and which yield to very little force, are said by the author to be the most suitable ones for divulsion. In the dense hard strictures of the anterior penile urethra, internal urethrotomy is a better operation. (Epitome of the British Medical Journal, December 16, 1893, p. 98.)

GENERAL SURGERY, AND AFFECTIONS OF THE BONES, JOINTS, &c.

ARTHRECTOMY OF ELBOW AND ANKLE JOINTS.

At the Royal Medical and Chirurgical Society, on December 12, 1893, Mr. H. H. Clutton read a paper in which he advocated arthrectomy of the elbow-joint as an early operation in place of a late excision. If the cartilages were not extensively diseased a movable joint might be anticipated. This had been obtained in all the cases in which it was expected without any passive movement, which was not employed in any of the cases. Nine cases were recorded, which represented the writer's entire experience of arthrectomy as applied to the elbow-joint. The first two became ankylosed for reasons stated in the history of each case, but obtained very serviceable arms. Six resulted in more or less movement in the elbow-joint with cessation of the disease. The ninth and last case was subsequently excised. The opinion was expressed that passive movement was not now desirable if the wound followed an aseptic course ; that mobility would be established by the patient's own efforts if it were to be obtained at all ; and that excision might follow at a later date if required. Every ankle-joint since 1887 which had required operative treatment at the writer's hands had been submitted to arthrectomy. There were six in number :—(1) Boy, aged 9, 1887 ; now standing and walking thirteen hours a day as a hosier's assistant. (2) Boy, aged 3, 1887 ; followed by scarlet fever and lost sight of. (3) Boy, aged 7, 1889 ; now walking without lameness, and with some movement in ankle or tarsal joints. (4) Girl, aged 2, 1889 ; last seen June, 1890, when the wounds were healed and the foot free from disease. (5) Girl, aged 6, 1890 ; now walking without lameness and with some movement in ankle. (6) Girl, aged 6, 1890 ; now walking, but with some slight displacement of foot ; no disease. Two other cases of partial operation were mentioned. The important point in treatment appeared to be the use of a knee-rest for at least a year after operation. In the writer's opinion an effort should always be made to preserve the foot whenever an operation was imperatively needed, for an amputation can still be done if the first operation is unsuccessful. (British Medical Journal, December 16, 1893, p. 1323.)

ERYSIPELAS.—Treatment.

Felsenthal (*Zeitschrift f. Kinderheilk.*, vols iii—iv, December, 1893) states that his usual treatment in cases of erysipelas is scarification, which he formerly followed by dusting with

iodoform. He now prefers using ichthyol, which not only is a powerful reducing and deoxidising agent, but which also appears to exert a specific influence on streptococci. While a 3 to 4 per cent. solution of ichthyol will actually destroy them, their growth is arrested by a 1 per cent. solution, which also, as compared with perchloride of mercury, is non-poisonous, and does not irritate as iodoform does. The treatment by incisions is strongly advocated by the author, and was practised in thirty cases. The patient having been anæsthetised, all fluid is, as far as possible, expressed by massage, and a 60 per cent. ointment or solution rubbed into the wounds by the hand. Another layer of the ointment is then used as a covering, gauze and wool applied, and the limb suspended vertically. The inunction is continued with during several days, and the dressing, when possible, changed twice daily. The cases described show a very rapid defervescence and arrest of the affection. With the facilities this treatment afforded for bacteriological research the streptococcus was found in fourteen out of fifteen cases, coexisting four times with the staphylococcus pyogenes aureus. (Epitome of the British Medical Journal, February 10, 1894, p. 24.)

HIP JOINT, ANGULAR DEFORMITIES OF.—Treatment.

From my experience in various cases of ankylosis about the hip, I have found that many of the distortions following hip disease, which are supposed to be due to contraction of the tendons around the joint, are in reality retained in place to a greater extent by the adhesions about the capsule and between the bones, and that in many cases the cutting of the tendons alone will be insufficient to allow reduction of the deformity. I believe it is a simpler and safer operation in many cases to do a subcutaneous osteotomy below the trochanter than to endeavour to cut, either subcutaneously or through an open incision, the adhesions which bind the joint in its distorted position, and I have learned that it is very easy to be mistaken in regard to the presence of movement in a joint, and we very frequently imagine that we feel a slight amount of motion in ankylosed hips, whereas the motion is really between the flesh and the bone or in the sacro-iliac synchondrosis, and even in joints which are more easily accessible (as the knee and elbow) I have seen men of large experience deceived in supposing that movement was present, when subsequent operation showed firm bony ankylosis. In regard to the choice between osteotomy or *brisment forcé*, a good deal must be left to the judgment of the operator and the conditions of each individual case, and there are certain cases where I believe the dangers of re-exciting inflammation in the joint by *brisement forcé* are so great that

I think it is safer to do an osteotomy, and if the joint is to be broken up, I believe in making section of all constricting bands which can be safely cut, breaking up the adhesions thoroughly under an anæsthetic, placing the limb at once in the required position, and then keeping the part absolutely at rest until all pain, swelling, and tenderness have subsided, and I find benefit in many instances from diminishing the blood supply to the joint by means of moderate compression over the artery supplying it with blood. After the joint is completely free from pain slight motions should be given every day to restore to function, but never carried to the point of producing pain or tenderness which will last as long as twenty-four hours. If your efforts to restore functions are followed by increased heat or tenderness, cease your manipulations and be content with the improved position and a stiff joint. If, however, there is slight motion in the joint and the employment of gradual manipulation and massage is not followed by inflammatory reaction, continue the procedures daily, increasing in force and frequency as experience warrants, and in many instances you will be able to cause absorption of inflammatory deposits, break down old adhesions, and restore excellent motion to joints which have been considered useless for months and sometimes for years. (Dr. R. H. Sayre, British Medical Journal, December 2, 1893, p. 1198.)

OIL OF CINNAMON AS AN ANTISEPTIC.

In the *Journal de Médecine et de Chirurgie pratiques*, 1893, No. 11, Dr. Just Championnière extols the antiseptic value of oil of cinnamon. The attention of the author was first called to the antiseptic properties of the essential oils by the works of M. Chamberland, in 1887. The ideal antiseptic should be efficient and yet be free from irritating qualities ; it should not be poisonous nor possess a disagreeable odour. After numerous experiments with the various volatile oils, Championnière found that the oil of cinnamon was the most active, very closely approaching corrosive sublimate as a microbicide. Considerable difficulty was experienced in obtaining a preparation of the oil free from irritating properties. When combined with rétinol, however, it was found to be free from this objection. The following formulæ have proven quite satisfactory :—℞: Rétinol, 75 grammes; sterilised wax sufficient to make a proper consistence; cinammon oil, 1 gramme. Or, ℞: Rétinol, 75 grammes; sterilised wax, 25 grammes; cinnamon oil, 1 gramme; β-naphthol, 1 gramme. The oil must have been recently re-distilled. The preparation is spread on lint and applied to the wound. The author has employed this preparation in cases of laparotomy, radical cure of hernia, excision of the breast, &c., and he claims

that extensive wounds, even those which are drained, may be kept in a very satisfactory state of antisepsis. (The American Journal of the Medical Sciences, October, 1893, p. 479.)

SARCOMA OF THE BREAST.

The disease usually presents as a rather large, rounded or ovoid, lobulated, bossy tumour. It feels firm and elastic, except where cysts prevail. It is distinctly circumscribed, and freely movable over the subjacent parts and under the overlying skin. Occasionally, however, the latter becomes adherent, discoloured, and ulcerated, and the tumour may fungate. The subcutaneous veins are generally obviously enlarged. The nipple may be flattened by stretching, but its retraction is never caused by the disease. Serous or sero-sanious discharge from the nipple is exceptionally seen—1 in 9·5 cases, according to Gross. There is no enlargement of the adjacent lymph glands. Satellite secondary nodules in the parts adjacent to the main tumour are hardly ever met with. A certain amount of pain and tenderness is experienced in many cases, but these sensations present no special characteristics. The disease generally runs a chronic course. With regard to the *treatment*, the whole breast, together with the tumour and the overlying skin, should be freely removed in every case at the earliest possible date. Unless the tumour is situated altogether on the anterior aspect of the gland, the fibrous sheath of the pectoral muscle should also be removed with it. Simple enucleation of the tumour must be condemned as an unscientific procedure. After extirpation of the diseased part it is a good practice to wash the wound with strong solution of chloride of zinc (20 to 40 gr. ad. 1 oz.). In doing the operation care must be taken to completely remove the axillary mammary processes. When enlarged lymph glands are present the axilla should be cleared, just as is done for cancer. As to the mortality after the operation, of the 14 primary extirpations in my list (the axilla having been cleared in one) all recovered. Recurrences rarely supervene later than four years after the primary operation. Those, therefore, who survive free from return of the disease after this period may be regarded as cured. Of Gross's 91 operated cases 12 fulfilled this requirement, or 13·18 per cent. Recurrent growths, when operated, should be freely excised as soon as noticed. This practice not only prolongs life, but in many cases, after repeated operations, it has at length resulted in radical cure. (Mr. Roger Williams, The Medical Chronicle, February, 1894, p. 306.)

SYPHILITIC DISEASE OF THE SPINE.

This, I believe, is a rare condition. I have met with it, as far as I know, in only two or three instances. These have been in

the tertiary stage of syphilis, and in the form, judging from the symptoms, of chronic osteitis and periostitis, similar to that which may attack any of the long bones. I will briefly relate the case which seemed to be the most clear illustration of the condition that I have seen. A man 45 years of age came to the hospital with tertiary syphilis, from which he had suffered severely at intervals for upwards of fifteen years. He now had several broken-down gummata on the skull, with severe hemicrania and numerous syphilitic scars about his face, trunk, and limbs. He complained of severe nocturnal pains in his back, and said that his spine was becoming bent and so stiff that he could not stand uprightly. On examination the dorsal curve of the spine was found to be considerably increased, so that the shoulders were very round and the head was bent forwards. Attempts at movement were unattended with any increase of pain, and so was exercise, except that it produced the aching of muscular fatigue. The patient was ordered five grains of iodide of potassium, which were increased in the course of a few days to twenty grains, three times a day. He rapidly improved in general condition, and the gummata were absorbed and his ulcers healed. His hemicrania and also his spinal pain were quickly relieved, and the stiffness of the column was much diminished. Six years have since elapsed, and he has been seen from time to time. After a course of iodide of potassium he remains for a time fairly well; then new gummata or cutaneous ulcers make their appearance, and pain returns in the head, or, with the same feature of severe nocturnal exacerbations, in his spine. This always yields, as do the other lesions, to a fresh course of the iodide of potassium. Each attack, however, has left the spine more arched and more stiff, and when I last saw him he was unable to raise his head above the level of his lower dorsal vertebræ. The direct proof that the spinal affection is syphilitic is wanting, as the patient is still living; but that it is syphilitic can, I think, hardly be reasonably doubted when it is remembered that the patient is subject to inveterate tertiary syphilis, that the affection is always combined with other syphilitic lesions, that it is attended with nocturnal pains closely resembling those which affect his head, and that its active symptoms have always readily yielded to a course of iodide of potassium. (Mr. Howard Marsh, The Lancet, September 30, 1893, p. 793.)

VARICOSE ULCERS.—Treatment.

Kirsch (*Therap. Monatsh.*, September, 1893), in those cases of varicose ulcer where absolute rest is impracticable, achieves good results by bandaging in the following manner:—If the ulcer is deep it is filled with iodoform gauze to the level of

the surrounding skin, the edges and borders are dusted with dermatol, and the whole is covered with an absorbent compress. Over this is placed a sufficiently large sponge with a flat under-surface, the sponge having been previously allowed to swell in warm water, and being then applied moist, but not too wet. When, however, the ulcer is flat a hydropathic covering is applied to the surface direct. In either case the limb is then surrounded from the toes to the knee with a moderately tight non-elastic binding, the sponge being included in the bandage. In the course of one or two days the sponge will be found to have embedded itself in the ulcer, and, with continued treatment, the œdema will diminish and disappear, while the edges will be found soft and flattened and the ulcer in a granulating condition. At this period an ointment can be applied, but the sponge compression should be persevered with, even after the ulcer appears to be healed. When the edges are abnormally hard and rigid the author has found massage very useful, the application being by means of a specially-constructed roller. Should the ulcer be too sensitive to allow of immediate compression the author envelopes the limb to as high a limit as possible, again commencing, where possible, above the tender area. The œdema will thus gradually be pressed towards the ulcer and disappear, and at the same time successive bandages will allow of greater approximation to the ulcer until the whole of it can be included in the bandage as described. The author has convinced himself of the efficiency of this treatment in a large number of cases of varicose ulcers, the principal advantage being the ability of the patients to follow their ordinary avocations. His successful cases included ulcers which for years had resisted all treatment. (Epitome of the British Medical Journal, November 18, 1893, p. 82.)

AFFECTIONS OF THE SKIN, &c.

ARSENICAL PIGMENTATION OF THE SKIN.

In order to control the so-called bromide acne Fowler's solution is often combined with the bromide mixture, and this being taken for months, or even years, arsenical pigmentation results; not a few such cases having been referred to me for diagnosis by the very neurologists under whose auspices they have taken the drug. The same accident frequently occurs in children with chorea, to whom arsenic is often given. Arsenical pigmentation may be recognised, partly by its sepia tint, and on the trunk in the early stage the hair-follicles are the last part affected; hence there are white dots on a dark sepia-brown ground, but at a

later stage these also are involved, and then the tint is uniform. The border shades off gradually into the normal skin, and the face, neck, and abdomen are generally most deeply tinted. When psoriasis has been treated by arsenic, the site of the old patches is the seat of the pigment, but if given for a very long period diffuse pigmentation may ensue. As a rule, however, it is not in the treatment of skin diseases, but in those of the nervous system, such as epilepsy and chorea, that diffuse arsenical pigmentation is produced. The main factors in its production are the dose and the length of administration, but idiosyncrasy also plays a part, as a very moderate quantity will sometimes produce it, and children are much more susceptible to its influence in this respect. In one case, a girl, with chorea, to whom I gave three minims of Fowler's solution, gradually increased to five minims three times a day, it developed within a fortnight. Arsenic also produces hyperidrosis of the palms and soles, and horny thickening, beginning round the sweat orifices, and gradually forming a uniform horny plate over the whole palmar, and all but the arch of the plantar surface. Finally, it predisposes, if it does not actually produce, herpes zoster sufficiently often to show that there is an etiological relationship. (New York Medical Record, October 21, 1894, p. 514.)

ECZEMA PALPEBRARUM.

Trousseau (*Annales de Dermatologie et de Syphiligraphie*, 1893, No. 5) regards antiseptics as of great value in the treatment of this often obstinate affection. In order to procure asepis of the affected region he regards it as necessary to cure as rapidly as possible the eczematous conjunctivitis which always accompanies the affection of the lids, employing for this purpose a solution of sublimate 1 : 10,000, which is later increased to 1 : 2,000. This solution is applied not only to the conjunctiva, but also to the cutaneous surface, employing at the same time frequent bathing with watery solutions of boric acid. In order to procure repose of the lids the eyes should be kept closed, and scratching is to be carefully avoided. If the eczema is much irritated the antiseptic solutions are applied during the day, and antiseptic poultices of rice-flour at night. When there is much oozing the poultices should be replaced by powders of bismuth, oxide of zinc, or boric acid. Fissures are to be touched with a 3 per cent. solution of nitrate of silver. For itching, water containing a small proportion of alcohol, or $\frac{1}{2}$ per cent. solution of carbolic acid in water may be used, and quinine given internally. Ointments are to be employed only in the terminal stage when desquamation appears, beginning with those that are least irritating. (The American Journal of the Medical Sciences, October, 1893, p. 488.)

LUPUS.—Treatment by Salicylic Colloid.

For nearly five years I have used salicylic colloid (the formula I prefer is as follows: ℞ Acidi salicylici ʒj.; extracti cannabis indicæ gr. x.; collodii flexilis ad ʒj.; fiat pigmentum) in the treatment of lupus vulgaris affecting the skin. It seemed so safe and so easily applied by unskilled persons, it caused so little pain comparatively, and the chances of its destroying the affected area of skin were so great, that I chose this form of applying salicylic acid in preference to any other, such as the plaster-mull or the salicylic plaster. Much in the same way in which it acts on warts and corns (in which, however, the horny layer of the epidermis is equally predominant with the elongated and enlarged papillæ) it acts on lupus. Under its influence ulcerating patches dry up, tubercules disappear, and the resulting cutaneous tissue is much more flexible and natural in appearance than is generally the case in lupus. (Dr. E. Mansel Sympson, The Practitioner, February, 1894, p. 96.)

LUPUS VULGARIS.—Treatment of.

Hofrath D. Veiel (*Berliner Klinische Wochenschrift*, No. 39) describes the manner in which he uses pyrogallol for the treatment of lupus vulgaris. The first treatment consists in the destruction of such lupoid tissue as is visible and can be felt. For this he chooses his method according to the locality and variety of the lupus, sometimes a mechanical treatment (scarification, scraping off), sometimes a chemical one (caustic potash, or nitrate of silver pencil, or pyrogallol vaseline, 10 per cent.), sometimes a thermic treatment (thermo-cautery, galvano-cautery). When the pyrogallol cannot be used alone from the first, he uses a bandage of 10 per cent. pyrogallol vaseline salve spread on lint. The first bandage is left for two days; from the third day on the same dressing is renewed once a day. In this manner he seeks fully to destroy any lupus particles which may have escaped the first treatment. This is quickly accomplished. It is advisable to protect the surrounding healthy skin by a plaster (for example, of zinc benzol salve on mull) from the action of the pyrogallol, which produces a very painful irritation. On the fourth or fifth day the application of the strong pyrogallol is usually exceedingly painful, so that in many cases morphine injections become necessary. An addition of cocaine to the salve did not prevent the pain. The pain is most severe upon the entrance of air when the bandage is moved or opened. The change of bandage should be made as quickly as possible, and very carefully applied. When this pain occurs it is time to leave off the strong salve and take another course. Formerly the healing was obtained under vaseline or iodoform, but Veiel now uses a weaker pyrogallol salve, which

does destroy the lupoid tissue, but does not prevent the formation of healthy granulations. The 2 per cent. salve usually fulfils these conditions. If this is too strong, a 1 per cent. may be used, or even a ·5 or ·2 per cent. may be used as soon as the granulated surface is formed. The healing is usually very slow by this method, but the scars are smoother and prettier than by any other method of treatment. Therefore, he uses the pyrogallol when the face or any part is affected where a pretty scar is desirable. When this is no object he uses transplantation after Thiersch's method as soon as the smooth granulated surface is formed. The urine must be constantly watched during the treatment, and the use of pyrogallol at once stopped if albuminuria or hæmaturia occurs. Veiel has never in all the cases treated seen any permanent action upon the kidneys or general health, no doubt because the pyrogallol is used on comparatively small surfaces. The good results in tuberculosis of the skin led him to try the pyrogallol also for that of the bones. In tuberculosis of the hollow bones it was without result, but cured four cases of caries of the tarsal bone. They were treated during two weeks with the 10 per cent., and then, until cured, with 2 per cent. salve. The cure took from 8 to 13 weeks. He used a ·5 per cent. watery solution of pyrogallol for a girl who had lupus of the conjunctiva, dropping it in the eye daily. She has now been well for a year. (The Therapeutic Gazette, January, 1894, p. 34.)

PITYRIASIS VERSICOLOR.

E. Bodin (*Médecin Moderne*, No. 68, 1893) says the indications in the treatment of pityriasis versicolor are to destroy the fungus and to prevent recurrence. The former is easy, inasmuch as the fungus is confined to the epidermis. If the patches are not too numerous or too large, it is sufficient to paint them two or three times with tincture of iodine, afterwards washing the parts with soap so as to remove the epidermis containing the fungus. When the disease is extensive, it can be cured in eight to ten days in the following manner: In the morning, the parts should be washed with soft soap and hot water. In the evening the following ointment should be applied: ℞ Resorcini, acid, salicylic, āā 1.0; sulph. præcipit., 5.0; lanolini, vaselini, sebi, āā 25.0. In such cases sulphur baths are also of great service. Prevention of recurrence can be secured only by thorough disinfection of the clothes which are in direct contact with the skin; these should be washed with very hot water and soap, or better still, they should be exposed to the action of steam. (Epitome of the British Medical Journal, December 30, 1893, p. 108.)

PRURITUS.—Treatment.

In the discussion of a paper on this subject, by Bronson, a number of interesting points are brought out. Bronson held (*Journal of Cutaneous and Genito-Urinary Diseases*, vol. xi., No. 135) that the underlying condition of pruritus is hyperæsthesia, hence the prime indications in the treatment are to allay or annul excess of nervous excitement. Measures to remove local excitants include such as directly tend to prevent scratching. To admonish the patient to restrain from this is usually of little avail. Restraint may be possible during waking hours, but at night, when the trouble is always at its worst, and especially during the state of somnolence midway between sleeping and waking, no power can prevent it. It can only be avoided by first mitigating the lesion through the aid of antipruritics. Sedatives, when used internally, are apt to be disappointing, and, indeed, after their use general hyperæsthesia is usually exaggerated. Narcotics are especially objectionable. Bromides are often indispensable and may be required in full doses. To avoid the weakening effects of insomnia, sulphonal or some other hypnotic is occasionally needed. In addition two internal remedies are worthy of mention; these are cannabis indica and gelsemium. Carbolic acid, characterised by Unna as the opium of the skin, is the most useful antipruritic agent possessed by the dermatologist. The following antipruritic oil is warmly commended, and it is stated that it never causes any results more serious than a trifling dermatitis:—℞ Carbolic acid, ʒi.; liquor potass., ʒi.; ol. lini., ʒi. Sig.—Shake before using. A drop or two of the oil of bergamot will cover the linseed oil. Salicylic acid and salol act much as does carbolic acid. Thymol is often valuable, but also is irritating to sensitive skins. Pruritus hyemalis is prevented by guarding against cold, since the sole cause of this distressing affection is lowered temperature.

Hyde, in commenting upon these conclusions of Bronson, stated that he has long since dropped cocaine, since it is extremely liable to develop the habit. He alluded to two methods of treatment, both of value. The first consists in exclusion of air. Thus some of the successful pastes depend for their beneficial effects upon this action. Another method of relieving pruritus, when it is circumscribed and strictly limited to one side of the body, is in treating the other and corresponding side with substitutive stimulants. A case is narrated in which a patient had long suffered from an almost intolerable pruritus of one leg. Relief was obtained only after stimulating the other corresponding side of the body. Hyde called attention to gout as a frequent cause of pruritus. Next in importance he names diabetes.

Corlett states that in prurigo hyemalis the internal administration of ichthyol has apparently given him excellent results. He applies lanolin to the skin locally after the surfaces have been bathed. Resorcin has given better results than any other drug. This is used in the strength of 3 to 5 per cent., and is applied in aqueous solution.

Morrow condemns the use of gelsemium, and states that he has had excellent results from the employment of the hot-water bag applied to the spine. Indeed, he lauds this treatment above all others in certain obstinate cases occurring in people. Among the local remedies he has had the best results from a combination of carbolic acid and camphor. He uses this in the strength of 1 and 2 drachms of each drug to the ounce of zinc ointment. Another excellent remedy is salicylic acid made up in the form of wax and spermaceti, in the form of an ice, or in rose-water in the form of a solution.

Hardaway states that, in addition to the remedies already mentioned, there are three drugs which he gives with sometimes successful results. These are quinine in 10- or 15-grain doses at night, wine of antimony given in divided doses during the day, and pilocarpine by the mouth or hypodermically, especially where the skin is harsh and dry. He holds that carbolic acid as a local application stands at the head of the antipruritics, but prefers to have it sprayed on by means of an atomiser.

Denslow calls attention to the value of ergot. (The Therapeutic Gazette, January, 1894, p. 66.)

PSORIASIS.—Thyroid Extract in.

At the Manchester Medical Society, on December 6, 1893, Dr. Brooke related five cases of obstinate psoriasis—all in young males who had been subjected to the thyroid treatment as introduced by Dr. Byrom Bramwell. One "thyroidin" pellet was given daily. Not one of the cases showed any improvement; two were acutely aggravated and two complained of loss of virile power. Dr. Bramwell's reports seem to show that the drug is capable of influencing some cases very powerfully, but these results and those of other observers, communicated privately, prove that it is not in any sense a "specific," but that its field of action is limited. (The Lancet, December 23, 1893, p. 1572.)

Psoriasis.—Treatment by Thyroid Extract; Failure.

I have tried the thyroid extract as yet in two cases of psoriasis only—the one a girl of 15, the other a married woman of 40. The woman, aged 40, had been affected with the disease for 18 years. I treated her for 19 consecutive days, during which

I administered daily on the average 22½ minims of Brady and Martin's extract, which quantity is stated by the manufacturers to equal exactly one quarter of a sheep's thyroid gland. This dose is rather more than the double of Dr. Bramwell's average dose, and the duration of treatment extended well beyond the time by which, according to his cases, well marked improvement ought to occur. But I was not able to attribute to the thyroid treatment any influence whatsoever on the disease. The doses I gave varied on different days. However, on three of the days I gave ℥ 30 daily, on two of them ℥ 35 daily, on one of them ℥ 40, on another ℥ 45 of the extract. In Dr. Bramwell's second and third cases he produced profuse shedding of scales within the same period (nineteen days) by a daily dose of five minims only. The girl of 15 whom I treated had been previously under my care for psoriasis of seven years' duration, and had got quite well under external applications only by the end of August last. Since then the disease had again appeared, although in a much less degree than before, and, at the date that thyroid treatment was commenced, namely, October 23, consisted only of small spots scattered somewhat sparsely over the trunk and limbs. I treated her for a month, namely, until November 23, a period of 31 days, during which I administered on the average seventeen minims of the thyroid extract daily, which is nearly double Dr. Bramwell's average dose, or (considering the girl's age) is more than the double of it. As in the previous case, so in this case also, I was not able to attribute to the thyroid treatment effect of any kind on the disease. In this case equally, the doses given varied on different days. However, on six of the days I gave daily ℥ 30 of the extract, on two of them ℥ 35 daily, on one of them ℥ 40, and on another ℥ 45. The total quantity of extract, taken by the patient in the month, was very nearly the equivalent of six thyroid glands. My patients were of the same sex as Dr. Bramwell's, they were respectively of about the same ages as his first and second cases, and I used the same preparation of the thyroid gland that he did: also I was particularly careful with this preparation. I obtained it direct from the manufacturers, who state that it will keep well for a fortnight; but I always got it fresh every week, and I kept it in ice, in a refrigerator, so as to avoid still further any deterioration. (Dr. Balmanno Squire, British Medical Journal, January 6, 1894, p. 13.)

SEBORRHEIC ECZEMA.

Seborrheic eczema is discussed fully in a recent monograph by Unna (*Sammlung klinischer Vorträge*, New Series, No. 79, Leipzig, 1893), who was the first to direct special attention to its

pecularities five or six years ago. The affection is characterised by (1) parakeratosis of epidermis; (2) epithelial proliferation; (3) inflammation of the corium, variable as to depth; (4) augmentation of the fatty secretion of the skin, together with increased activity of the sweat-glands. The disease is microbic in origin, and Unna believes that he has defined two species of organisms, the flask-bacilli (Malassez's spores) and the morococci (mulberry cocci), the former being found chiefly in the crusts and scales of the scalp, the latter in the scales of the body, especially if moist. [Seborrhœa oleosa is regarded by Unna as being due to an affection of the sweet-glands or coil-glands, and as being therefore really a hyperidrosis.] In typical cases the scalp is first attacked, the disease usually occurring between the ages of twenty and thirty. When the hairless regions are involved the diagnosis is not so easy, but the sternal region and the back between the scapulæ are favourite localities. Cleansing the patches with spirit of soap, and the use of ointments of sulphur, constitute the best remedies and are generally effective in curing the disease, though relapses are common. (Medical News, March 17, 1894, p. 298.)

THYROID GLAND EXTRACT IN DISEASES OF THE SKIN.

At the Medical Society, on January 8th, 1894, Dr. Phineas Abraham said he had begun to employ the thyroid gland, in the form of Burroughs, Wellcome and Co.'s tabloids, five months ago, and up to the present time he had prescribed them to about 100 patients; but, as the notes of a few cases had been mislaid, his observations referred to only 90. For certain reasons he had been chary in ordering them to private patients. In one case the lady declared that the lozenges were "disgusting," and declined to take any more after the first dose. Curiously enough, two patients with advanced nodular leprosy expressed themselves as feeling better after taking the tabloids, and there was certainly a rapid diminution of febrile attacks with acute erysipelatous œdema; but, of course, he did not suppose that the remedy was going to have any real curative effect in that disease. The usual dose he gave was three tabloids per diem, and if unpleasant symptoms ensued this was reduced to two or one. As a rule, the patients seemed to prefer them after meals; but in those cases in which they did good he found it made little difference whether they were swallowed on an empty stomach or not. The tabloids had been administered in 65 cases of psoriasis, 5 of lichen planus, 7 of eczema, 2 of chronic urticaria, 5 of lupus, 1 of prurigo senilis, and in 1 of a peculiar papular eruption which superficially simulated adenoma sebaceum. Of the psoriasis cases, 17 might be discarded as having been under

treatment or observation for too short a time. In the remaining 48 some definite improvement was noted in 18, but only 7 of these latter were under treatment with thyroid gland alone. In 16 the result as regards the eruption was practically negative, and in 15 there was actual increase of the eruption during the exhibition of the remedy. In 28 of the patients disagreeable symptoms were complained of—such as headaches, palpitations, muscular tremors, neuralgic pains, dyspepsia, &c. Of the 5 cases of lichen planus there was marked improvement in 3, but these also were under external treatment at the same time. Three complained of disagreeable symptoms. Of the 7 eczema cases 3, he believed, derived benefit from the thyroid, but they also were under simultaneous other treatment. Unpleasant effects were produced in 3. Neither of the 2 cases of chronic urticaria derived the slightest benefit; the trouble, indeed, was rather increased. The case of prurigo senilis also derived no benefit; the anomalous papular eruption, however, certainly began to diminish after the patient commenced with the tabloids, but this case was also under other treatment. Two of the lupus cases showed improvement, but they also were under external treatment. The conclusions that he thought might be deduced from his observations and from those of others, so far, were as follows:—(1) The ingestion of thyroid gland, although of specific therapeutical value in myxœdema and sporadic cretinism, has no constant effect in psoriasis and in many other diseases of the skin; (2) in a large number of cases the results are negative, and in a few the cutaneous lesions are aggravated; (3) in a certain number (a minority) there is a distinct and marked curative effect; (4) at the present time there were no prior indications as to which cases its administration is likely to benefit; (5) in a considerable number of the patients disagreeable constitutional effects are induced; (6) age and sex have nothing to do with the success of the remedy. In future he intended to employ thyroid treatment only in cases which "hung fire" under usual methods, or in those in which its use may be physiologically indicated. (British Medical Journal, January 13, 1894, p. 66.)

AFFECTIONS OF THE EYE, EAR, THROAT, AND NOSE.

BLEPHARITIS MARGINALIS.—Hydrogen Peroxide in.

The manner of its application is as follows:—The larger crusts should first be removed or scraped off, after having been softened by tepid water. Then a little cotton is wrapped tightly around a Japanese tooth-pick, which is dipped into the

dioxide in a little dish. The cotton is then swept over the entire edge of the lid. The characteristic bubbling will follow, and the application is repeated until the bubbling ceases. The ulcers will then present a whitish appearance. If care is taken, and the cotton is not too freely saturated, none will come in contact with the conjunctiva. In order to obviate all pain, a few drops of a 4 per cent. solution of cocaine can first be instilled into the eye. This treatment should be repeated every day. The remedy is one that any intelligent person can apply at home, and one from which there is no danger. My experience with the use of salves and ointments is somewhat disappointing. They often cause unaccountable irritation, and on this account are unreliable. In the method advised a clean remedy is used, which acts promptly and efficiently. By its chemic action it destroys the germs which cling so closely to the edges of the lids. It is not a cure-all or a specific, but I certainly have had the happiest results from its use. (Dr. S. C. Ayres, Cincinnati, Medical News, December 23, 1894, p. 717.)

OPHTHALMIA NEONATORUM.—Prophylaxis.

Von Erdberg, in his inaugural address at Dorpat (*Centralblatt für Gynäkologie*, 1893, No. 24), considers the subject of the various prophylactics against blennorrhœa of the newborn. He is of the same opinion as Von Brunner, that only those cases can be counted blennorrhœal in which the Neisser's gonococcus is found, an opinion which has been attacked lately by different authors. Infection at birth he considers of rare occurrence, and intra-vaginal infection cannot be found. The average time of incubation of the disease was, in his cases from two to five days, while later appearance of the attack was due to late infection. Notwithstanding the great success of the Credé method and in contrast to many authors, the writer holds that patients coming with symptoms of hyperæmia, swelling and roughness of the palpebral conjunctiva, in which a sero-purulent secretion is found, present many difficulties in diagnosis to the ophthalmic surgeon. Silver nitrate he does not consider a specific against the disease ; it is possible with it to set up an acute traumatic affection. The best fluid for instillation is a sublimate solution of the strength of 1:5000; it produces scarcely any reaction. Fully 75 per cent. of children born need no solution of any kind in their eyes. When the vagina previous to birth has been thoroughly disinfected, distilled water is all that is necessary to drop into the eyes. It might be well, as soon as the head is born, and before the shoulders appear, to carefully cleanse the eyes with a sublimate solution 1:1000, or iodtrichloride 1:4000, using a piece of cotton, and taking care that the eyes are not

opened. This method should always be resorted to whenever it has been proven that the mother has gonorrhœa. It has been proven by Oppenheimer that mercuric bichloride in the strength of 1:30,000 is fatal to the life of the gonococcus. The writer includes a number of interesting statistics showing the comparative results of the methods of Credé, Kaltenbach, Küstner, and others. (The American Journal of the Medical Sciences, November, 1893, p. 619.)

SCOPOLAMENE.—A New Mydriatic.

The discovery of a mydriatic free from the dangers and inconveniences of atropine, would mark a distinct advance in therapeutics, and facilitate examinations of the eye, whether of refraction or for purposes of exploration. Such an agent, it is claimed, has been found in scopolamin, an alkaloid furnished by the roots of the scopolia atropoides. It is contained, with hyoscin, in the hyoscyamus niger or henbane, but differs materially from hyoscin in a chemical point of view. A recent article published by Raehlmann (Kl. Monatsblätter für Augenheilkunde, Jahrg., xxxi, S. 59) drew attention to this new mydriatic. It is more active than atropine, being used in about one-fifth the strength of that agent, a solution of from one to two parts to a thousand being the one usually employed. It acts with efficiency, its first effect on the pupil being in most of my cases visible at the end of five or six minutes, and full dilatation secured in from twenty to twenty-five minutes. Mydriasis lasts several days, but seems to be less prolonged than that due to atropine. Unlike atropine the effect of scopolamin on the cerebral cortex is to paralyse rather than to irritate, and the frequency of the pulse is not increased but diminished. This has been proved by experiments on animals. It is said to cause no nervous excitability, and not to affect appetite. The advantages claimed by Raehlmann for scopolamin over atropine are as follows :—(1) Dryness of the throat occurs only after excessive use ; (2) Its application can be prolonged without causing irritation, and it may even be substituted for atropine when the latter is no longer borne ; (3) It is better adapted to the treatment of certain inflammatory affections, particularly those connected with hypopyon, than is atropine ; (4) It causes no increase of intraocular pressure, has even been used with relief to pain in cases of acute glaucoma. Raehlann's article is based on observations made with scopolamin hydrochlorate. For four weeks past I have used the hydrobromate, the only form of scopolamin I have been able to procure, and which was furnished me by T. Metcalf & Co. As far as I can judge with so limited an experience the effects are similar. Since commencing with it I have used no atropine. (Boston Medical and Surgical Journal, December 28, 1893, p. 641.)

SYMPATHETIC OPHTHALMIA.

Schrimer (*Von Graef's Archiv.*, vol. xxxviii, Part 4, 1892) in a comprehensive article of more than two hundred pages, has gone over the whole question in regard to sympathetic ophthalmia. The article is timely, as Deutschmann's theory is not nearly so fully accepted now as it was upon its first publication. Sympathetic inflammation is again differentiated from sympathetic irritation. The latter has two well marked characteristics; there is no inflammation, and the influence of the injured eye stops short upon its enucleation. In regard to the cause of sympathetic inflammation, our author divides all reported cases into two groups: (1) cases in which the tunics of the eye have not been perforated; (2) cases in which the tunics have been perforated. All the reported cases of the first group are gone over from whatever cause; and our author does not admit that the resulting sympathy of the second eye was anything more than sympathetic irritation in any case, with the exception of three cases of choroidal sarcoma with no perforation of the tunics but with a well-marked irido-cyclitis and its complications. In these cases Schrimer thinks the sympathetic inflammation probably due to the irido-cyclitis, which may have been due to endogenous infection through the presence of organisms in the system at large, and that the presence of a tumour provided specially favourable conditions for such an infection, and that a migration of the infection from one eye to the other was then reasonable. In considering the second group of cases, he shows that all the cases which excited a true sympathetic ophthalmia either had at the time or had in some past time had a uveitis, thus confirming the assertion of von Graefe that an inflammation of the uveal tract was a necessary factor in the production of all cases of sympathetic inflammation. In most cases an interval of three weeks intervened between the injury and the inflammation of the sympathetic eye; in a few cases the interval was less than this by two or three days; and in two reported cases in which the interval was only fourteen days, our author considers the evidence not conclusive. Inflammation has appeared in the second eye after the removal of the injured eye many times. It may occur at any time within three weeks; and in a few cases the interval has been even a few days longer. In two cases the eye was removed within a day or two after a severe injury, which caused a severe and somewhat persistent orbital cellulitis, and sympathetic inflammation began in one case after five weeks and in the other case after seven weeks, and was attributed in each case to the transmission of the infective inflammation from the orbital tissue. Two cases of sympathetic inflammation after evisceration are reported; but as the outbreak occurred within the period in which it may

occur after enucleation, they do not prove that evisceration affords less safety than the entire removal of the eye. An optico-ciliary neurotomy has been followed a considerable number of times by sympathetic ophthalmia. It is well established that reunion of the optic and of the ciliary nerves may take place, and even in one neurectomy in which the optic nerve to the extent of fifteen millimetres was removed, sympathetic inflammation began four weeks after the operation. It is probable, however, that the operation diminishes the risk to the other eye. Our author advances the following facts as opposed to the theory that irritation through the nerves is the cause of sympathetic ophthalmia. Irido-cyclitis in the exciting eye is an essential condition. In the vast majority of cases this irido-cyclitis is of bacterial origin. Mechanical irritation of the ciliary nerves even associated with intense pain, as in glaucoma, does not induce the disease. A transmission of such a nerve influence along the optic nerve is inconceivable when, as is often the case, the nerves are completely atrophied. Finally, when a sympathetic irritation is produced by a nerve influence, it is cut short by enucleation. The bacterial theory of the disease would account for all these facts. There is little reason, however, for supposing that the ordinary pyogenic coccus is the organism in question, and until we learn the tests for detecting the presence of the specific germ of this disease, we cannot definitely determine its method of transmission. A direct migration from one eye to the other seems probable. For treatment our author formulates the following rules: An eye which is blind, and which is in a condition to excite sympathetic inflammation should be removed, without waiting for any sign of sympathetic inflammation. If sympathetic inflammation has already broken out, the exciting eye, if blind, should be removed. If the sympathetic inflammation breaks out while the exciting eye retains some vision, the exciting eye should not be removed, for sometimes the second eye is entirely lost, while the exciting eye recovers more or less vision, and permanently retains vision. It is possible that both eyes may recover useful vision. From the clinical records the best treatment, aside from enucleation of the exciting eye, appears to be, sweating, mercurial inunction, warm compresses, darkness, atropine, and absolute rest of the eye. Operative interference to aid vision should be postponed as long as possible. (Boston Medical and Surgical Journal, December 28, 1893, p. 645.)

SYPHILITIC RETINITIS.

Dr. Boé gives the detailed history of a case that came under his observation in which the patient, a man 38 years of age, had complained of impairment of vision for three weeks. Ophthal-

moscopic examination showed that optic neuritis was present. One gramme of potassium iodide was ordered to be taken daily in divided doses for eight days, and one gramme of Neapolitan mercurial ointment inuncted every day. Rapid improvement took place. In this case the result was good, but Dr. Boé desires to point out that the use of mercury in syphilitic affections of the fundus is a double-edged sword, and that it is to be prescribed with great precaution, since it sometimes augments the disease it is intended to cure. He recommends that it should be tried in most or all cases in the first instance; but that if its good effects are not immediately apparent, it should be given up and replaced by lactate of zinc.—*Recueil d' Ophthalmologie*, vol. i., p. 206, 1893. (The Practitioner, October, 1893, p. 291.)

OBSTETRICS AND GYNÆCOLOGY.

CARCINOMA OF THE CERVIX UTERI.—Palliative Treatment of.

Sänger (*Schmidt's Jahrbuch*, Bd. ccxxxvii., p. 88) calls attention to the fact that Carl von Braun, before the days of total extirpation, succeeded in permanently curing 20 per cent. of his cases by amputating the cervix with the galvano-cautery loop, while Winter has shown that the results after extirpation are only 5 per cent. better. Only one-fourth of the whole number of patients who consult gynecologists are still in an operable condition; in those in which the disease has invaded the vesico-vaginal septum and the peri-uterine tissues palliative treatment alone is justifiable. This consists in currettage followed by cauterisation with the Paquelin, and, after the slough has come away, applications of solutions of chloride of zinc (50 to 30 per cent.). The writer separates the remains of the cervix as high as the peritoneum anteriorly and posteriorly and the bases of the broad ligaments laterally before removing the diseased tissue, tying any spurting vessels. The cervical canal is thoroughly cauterised. At the end of two weeks the chloride of zinc is applied several times. In one case of inoperable carcinoma thus treated there was no recurrence in nearly three years. In only one case out of five has there been a recurrence. (The American Journal of the Medical Sciences, November, 1893, p. 627.)

ECLAMPSIA.—Treatment.

Charpentier (*Archives de Tocologie*, 1893, p. 509), in a collection of 454 cases from various sources, gives his results as follows:—Children dead before or during labour, 164, or 36·12 per cent.; maternal mortality, 110, or 24·88 per cent. His conclusions are

as follows :—(1) Every pregnant woman who is albuminuric is exposed to eclampsia ; consequently we should examine the urine of all women during the period of gestation, and if the least trace of albumen be found they should at once be placed on an absolute milk diet. Milk is, above all, the best preventive of eclampsia. (2) Whenever one deals with an eclamptic, if she be strong, vigorous, and very cyanosed, start with a bleeding of 400 to 500 grammes, then administer chloral and milk as soon as possible. (3) If the patient be delicate and less cyanosed, and if the fits be less frequent, omit bleeding. (4) As far as possible let the labour occur spontaneously, and terminate without interference. (5) If labour be spontaneous, and uterine contractions fail, use the forceps or version if the child be alive. Should it be dead, we should have recourse to cephalotripsy or cranioclasis. (6) Avoid interference until the maternal parts be so dilated, or dilatable, as to make it safe for the mother. (7) Reserve induced labour for exceptional cases, where medical treatment has failed. (8) Reject absolutely Cæsarean section and forced labour ; above all, forced labours by the deep incision of the neck. (The American Journal of the Medical Sciences, February, 1894, p. 223.)

MENORRHAGIA DUE TO SMALL CYSTIC OVARIES.

In looking through the notes of some fifty cases of removal of ovaries or appendages for various causes, which have come under my care during the last few years, there is a small group of eight cases in which small cystic ovaries were removed, in which the tubes were healthy, and in five of which the prominent symptom was menorrhagia of a pronounced type, being in three of them of a most violent kind—as violent and uncontrollable as is found in the worst cases of fibroids and immediately threatening life. In these five cases the ovaries were of the type described by Lawson Tait, Pozzi, and others as the "small cystic ovary." That is, although there was some considerable amount of ovarian tissue left, yet, in addition to a marked connective tissue proliferation or oöphoritis, the organs contained several, or numerous cysts varying in size from that of a nut to that of a walnut or larger ; and a further point to which I would draw attention is the fact that these cysts contained dark blood-stained serum—there had been, in fact, extravasation of blood into the cystic cavities, and thus an indication is given of the amount of ovarian engorgement in these cases. In the remaining three cases the cysts contained clear fluid, the marked conjestion was absent, and the symptoms lacked the pronounced one of excessive menorrhagia, although prominent menstrual disturbance of a painful and nervous kind was present. It has, of course, been

known for some time that these small cystic ovaries are frequently associated with menorrhagia. This has been pointed out by Lawson Tait and by Pozzi ; but I doubt whether it is even yet sufficiently realised by medical practitioners, that persistent and violent menorrhagia, uncontrollable by curetting, may, and does, occur with a normal, or only slightly enlarged, uterus, and is due to ovarian disease alone. There is, I think, no doubt that the connection between the sanguinolent character of the cyst contents and the excessive uterine hemorrhage is more than a mere coincidence. The blood-stained fluid means severe ovarian engorgement, leading to extravasation, and it is probable that an engorged ovary provides a more powerful stimulus to the menstrual process than a healthy one. (Mr. C. J. Bond, p. 406, The Lancet, April 7, 1894, p. 852.)

OPERATIONS ON THE UTERINE APPENDAGES.—Results.

Chrobak (*Wiener klin. Wochenschrift*, 1893, No. 49) bases his conclusions on a study of all the operations performed in his clinic during five years, with special reference to cases of at least three years' standing. He calls attention to the great difficulty experienced by surgeons in learning the true condition of patients, since they do not as a rule respond satisfactorily to the requests for information. The actual menace to life presented by pyosalpinx has been exaggerated, since the record of the Vienna Hospital for four years showed only 14 deaths directly due to abscess of the ovary and tube in patients who were not operated upon (excluding tuberculosis) out of 4,351 from all causes. The writer's mortality in 146 operations was 4·1 per cent. Of 100 patients who were addressed, 47 responded. It was found that 8 were perfectly well, 32 improved, 3 were not relieved, and 4 were worse than before ; 26 reported that they were perfectly able to work, 15 could do more than before, but 6 could do no work. Of those who did not reply it was known that many were well, so that the writer was inclined to believe that in his own cases about 50 per cent. of the patients were entirely relieved by the operation. He concludes that the vasomotor disturbances following the removal of the adnexa are more severe and obstinate than those attending the normal climacteric. Inflammation around the stumps is of frequent occurrence. Marked diminution or extinction of sexual desire is comparatively rare. (The American Journal of the Medical Sciences, February, 1894, p. 224.)

PELVIC CELLULITIC ABSCESS.—Treatment.

The treatment of cellulitic abscess in the pelvis—*i.e.*, of true pelvic abscess—is summed up in three words: incision and

drainage. Abdominal section is here entirely uncalled for. The abscess should be opened as soon as fluctuation is detected or there is the faintest indication of pointing. In ordinary cases the drainage-tube is only required for a very few days. Unlike other forms of suppuration in the pelvis, cellulitic abscess, in my experience, tends, when once the matter has been set free, to complete and rapid recovery. I have never seen troublesome sinuses form, and the tendency to lateral displacement of the uterus from subsequent contraction of cicatricial tissue has, I believe, been much exaggerated. This affection offers no bar to subsequent conception, and when pregnancy again takes place its normal course is not interfered with. All this is in strong contrast with what occurs after other forms of pelvic suppuration. I have had no experience of cellulitic abscesses pointing in the vagina, and therefore have never had occasion to open one there. Frequently I have found, in cases of pelvic inflammation, soft fluctuating swellings depressing the vaginal vault, both laterally and posteriorly; but such swellings have invariably proved to be other than cellulitic, and I have often had cause to be thankful that I had not been tempted to open them from below. (Dr. Cullingworth, p. 419. The Lancet, November 4, 1893, p. 1104.)

PROLAPSUS UTERI.—New Operation for.

Freund (*Centralblatt für Gynäkologie*, 1893, No. 47) describes a new operation for prolapsus which he has performed in five cases with satisfactory results. Its advantages are rapidity of execution, as there is no denudation, painlessness (so that it can be performed without an anæsthetic), and the fact that there are no sutures to be removed. It is especially applicable to old women, who have neither hypertrophy of the cervix, destruction of the pelvic floor, nor tumour, &c., requiring the usual operations. It should not be undertaken if the cervix or vaginal wall is ulcerated. The operation consists essentially in inserting three or four purse-string sutures (as in Stoltz's method) of silver wire. A curved needle is first entered beneath the vaginal mucosa at a point just above the portio, and is run in and out, emerging at the point of entrance. As this suture is tightened the cervix is pushed upward (as in Lefort's operation), and the wire is twisted. A second circular suture is inserted an inch above the first, and is twisted until the calibre of the vagina at that point is narrowed to the size of the finger, then a third suture in the same manner, the last being placed close to the remains of the hymen. The latter must not be twisted so tight as to effect kolpokleisis. The operation is bloodless, takes only a few minutes, and is well borne by old patients, who need be kept in bed only one day. In one case

the patient, who had a large cystocele and rectocele, still menstruated and performed her matrimonial duties. There was no recurrence of the prolapse with severe muscular efforts. The sutures are not removed at all. (The American Journal of the Medical Sciences, February, 1894, p. 228.)

SUPRA-VAGINAL HYSTERECTOMY.—A New Method.

The essential steps of the operation are—viz., to secure the broad ligaments, and, if possible, the uterine arteries, by ligature ; to apply a temporary elastic ligature around the base of the tumour ; to divide the peritoneal envelope of the uterus all round, about two to three inches in advance of the temporary ligature ; to isolate the uterine body down to the level of the internal os, and there apply the serre-nœud, or permanent elastic ligature ; to arrest any bleeding that may occur on removing the temporary elastic ligature ; and finally to secure the uterine envelope to the parietes by double sutures, and then remove any redundancy of tissue and pack the cavity with iodoform and absorbent gauze after the closure of the parietal wound. The ovaries may be removed at any convenient stage of the operation. The redundant portions of the uterine envelope are best removed by means of Paquelin's cautery. I may be asked what my justification is for bringing this method to the notice of my professional brethren, or on what grounds I base my recommendation of it. My answer is the low mortality that has hitherto attended the operation. Although the method has been reserved for the most difficult cases, in which it was not possible to employ any other extra-peritoneal method, and in which the intra-peritoneal method or complete extirpation would be unusually difficult, the mortality so far stands at one death in 23 operations. Nor can even that one death be fairly attributed to the mode of operation ; for when the patient first came under my observation the evidence of serious kidney disease was so marked that I refused to operate. At the end of six weeks, under careful dietetic combined with medicinal treatment, the amount of albumen in the urine diminished so much, and the general condition so improved that I was induced to give her "the benefit of the doubt." This was so far justified in that the patient made very satisfactory progress after the operation with the exception of the character of the urine, and it was not till the sixteenth day that the kidneys gave signs of failure. The patient died within 24 hours thereafter. This method compares favourably with complete extirpation as regards facility of execution, and with the intra-peritoneal method also as regards final results. There is only one point in which it compares

unfavourably with the latter, and that is as regards the period of convalescence. I admit most freely that when a patient does recover favourably after operation by the intra-peritoneal method the period of convalescence is one, two, or even three weeks shorter than that which obtains under similar conditions by the extra-peritoneal method; but one can hardly put a loss of even three weeks into comparison with the loss of a life or lives. I have only to add that my total mortality under the extra-peritoneal method in 166 cases is about 15 per cent., that while in the first half the mortality was 18 per cent., that of the second half was 12 per cent., but that of the last fourth it was only 6 per cent., or a loss of 3 of 44, these 3 including the death from Bright's disease. When it is borne in mind that I do not operate in more than a fourth of the cases that come under my observation, and only in those cases in which the life of the patient is in danger from hemorrhage or degeneration of the tumour (usually cystic), or in which the sufferings of the patient are such as to demand surgical interference, I think my recent results may be considered satisfactory. (Dr. Granville Bantock, International Medical Congress, 1894, The Lancet, April 7, 1894, p. 891.)

Medicine.

GENERAL MEDICINE AND THERAPEUTICS.

Art 1.—ON TOXÆMIA IN TUBERCULOSIS.

By William Osler, M.D.

The symptoms of a profound intoxication in tuberculosis are met with under three conditions: First, in those rare cases, described most commonly in children, in which death may occur with symptoms of a profound toxæmia before there are any extensive localised foci of disease. "The children have prevented in the course of the disease all the signs of a profound intoxication, and as the tuberculous lesions of the lungs and all other organs are altogether insufficient to produce death, it is quite reasonable to attribute the fatal results to the bacillary intoxication." (Aviragnet.) These are the instances of the *fièvre infectieuse tuberculeuse suraiguë.* Second, acute miliary tuberculosis is often accompanied with toxic features, giving to many of the cases clinical pictures of severe typhoid fever. Post-mortem, miliary tubercles are found extensively throughout the viscera and on the serous surfaces. Third, in chronic pulmonary tuberculosis there may develop, with or without fever, a profound toxæmia, with dry tongue, delirium, rapid pulse, and signs of intense intoxication. The patient may be admitted to hospital unconscious, with a normal or subnormal temperature, and, as in a case which was under my care at the Philadelphia Hospital, the autopsy alone revealing the true nature of the disease.

The following case may perhaps be regarded as an instance of the *febris tuberculosa peracuta.* The striking features were the existence of a local tuberculous adenitis in the group of left cervical lymph-glands; a miliary tuberculosis of very moderate intensity in the liver and spleen; and a clinical picture of the most profound toxæmia.

Joseph S., aged forty-seven, a shoemaker, was admitted to Johns Hopkins Hospital, March 13th, 1893, with a swelling in the left side of the neck, cough, loss of appetite, and delirium.

Nothing very definite could be learned about the family history. The patient was married and had six living children.

His wife stated that he had had a cough the summer previously for about two weeks, and that he had not been very strong all winter, and had complained at times of pains in the abdomen. He had occasionally had chills and fever, and had sweated very much. The existing illness had begun five or six weeks before, with chilly feelings and loss of appetite. About a week later it was noticed that the glands on the left side of the neck were swollen. The man continued at work, however, until three weeks before presenting himself. He had neither nausea nor vomiting, but there was loss of appetite and progressive weakness and fever. For fully two weeks he had been irrational and at night quite delirious. The chief complaint had been the feeling of profound weakness, and for more than ten days he had been confined to bed, too feeble to walk.

On admission the patient looked very ill; the temperature was 102·7°, and rose by 6 p.m. to 105°. Throughout the day before the temperature had ranged from 103° to 105°, and the man had been delirious. The patient was a fairly well nourished man, and did not look as if he had been ill for any great length of time. The complexion was pale, but the lips and mucous membranes were of fairly good colour. The pupils were of medium size, and reacted to light; there was no strabismus. The tongue had a thick, yellow coating. The pulse was rapid, 124, regular, but soft, and the radials compressible. The respirations were a little hurried, 36 to the minute, but the man did not show any marked respiratory distress, and lay comfortably with his head low.

On the left side of the neck behind the angle of the jaw, and in the lower triangle the lymph-glands were moderately enlarged, hard, and not painful. The largest was about the size of a horse-chestnut. There were no other lymphatic enlargements.

The chest was symmetrical, the expansion equal, and there was no change on percussion; the respiration was everywhere clear, with the exception of a few sibilant râles at the bases. The expectoration was muco-purulent, small in amount, slightly blood-stained, and repeated examination failed to discover the presence of tubercle-bacilli. The heart-sounds were normal and there was no increase in the cardiac dulness.

The abdomen was symmetrical, full, and generally tympanitic. The patient had five movements of the bowels in the first thirty-six hours after admission. They were soft, but not in any way distinctive. The edge of the spleen could be easily felt and extended three fingers' breadth below the costal margin. The urine was dark reddish-brown in colour; 660 c.c. were voided in the twenty-four hours, containing a small quantity of albumin and a few granular and hyaline casts.

There was a decided diazo-reaction. The patient was irrational and frequently spoke in an irrelevant manner.

On the 15th, two days after admission, the patient was shown at the clinic, and I extract the following remarks from the report of my stenographer :—"As to the nature of this interesting case, from the appearance of the man and the history you would think at once of typhoid fever, though the temperature-chart is unlike this disease in the fourth or fifth week. Still the general features, the enlarged spleen, the diazo-reaction, and the negative condition of the examination render this diagnosis highly suggestive. Against this, however, there are several important objections. The temperature-range, as I mentioned, is more continuous than is usual in typhoid fever at this stage. The abdominal symptoms are slight, and there are no rose-spots, though it is true the spleen shows marked enlargement. Bronchitis is not an infrequent complication of typhoid, and at the bases it is of course common to have diffuse râles. A feature that suggests another diagnosis is the enlargement of the lymph-glands on the left side of the neck, which has increased during the patient's illness. There can be no question that the enlargement here has nothing whatever to do with the ordinary swelling of the salivary glands seen in typhoid fever. Here the affection is evidently in the lymphatic glands, and this important fact, with the protracted fever, the delirium, and the enlargement of the spleen, suggests rather that the patient has acute tuberculosis. Two other points of interest may be mentioned. The blood-count shows a marked diminution in the number of leukocytes, only 2,000 per c.mm. being present, which is, however, rather against tuberculosis. There is no optic neuritis, and there are no tubercles in the choroid."

The critical condition of this patient continued throughout the 16th and 17th. The temperature ranged from 103° to 105°, rarely falling below 103·5°. The pulse became more rapid, from 140 to 160; the abdomen became distended; the respirations very shallow and rapid; and the patient died early on the morning of the 18th.

Report of the Autopsy (by Dr. Flexner).—Punctiform hemorrhages were found on the skin of the shoulders and neck, and subcutaneous hemorrhage at the back of the neck on the right side, as also hemorrhages in the subcutaneous fat in several situations. The muscles were of a deep-red colour. The peritoneum was smooth; the diaphragm on the right side was at the fifth rib, on the left side at the upper margin of the sixth rib.

Both layers of the pleura were united by old adhesions, some of which were pigmented. The lungs themselves were crepitant and deeply pigmented; the lower lobes were congested, and, on

section, serum and blood escaped. The bronchi contained frothy mucus. Along the posterior edge of the right lung the pleura was greatly thickened, measuring 3 mm. in thickness. Beneath it the lung was pigmented. The lower lobe of the right lung presented areas of fresh consolidation, and the pleura was covered with fresh, granular fibrin. On section the lung was deep grayish-red in colour, and portions excised sank in water. The heart weighed 270 grams. The pericardium was smooth, the valves normal. The heart-muscle was soft and somewhat friable. The liver weighed 2,850 grams; the surface was smooth, and there were whitish and whitish-yellow miliary tubercles beneath the capsules, irregularly scattered and not in great numbers. The spleen weighed 500 grams; the section was dark-red in colour; the brown pulp was abundant, and there were numerous large tubercles in its substance. The kidneys presented a few atrophic patches in the cortex: the striæ were coarse and pale; the consistence a little firm. There was nothing of special note in the pharynx, stomach, or œsophagus. Peyer's patches were a little swollen; the mucous membrane of the intestines was somewhat congested. The appendix vermiformis was obliterated.

On the left side of the neck a mass of tuberculous glands extended from the angle of the jaw to the clavicle. Some of them were closely adherent to the veins in the locality. On section they were yellow and caseous. The group of glands above the clavicle, and the mediastinal glands also, contained caseous tubercles. The bronchial glands were enlarged, deeply pigmented, œdematous, but there were no tubercles visible to the naked eye.

On microscopic examination of the solid areas of the lung no tubercles were to be seen. There were numbers of diplococci, with distinct and easily staining capsules, obtained from the lung on the cover-slips. Cultures made from the lung, spleen, and kidneys remained sterile.

The groups of enlarged lymphatic glands in the neck in this case really led to the correct diagnosis. The general condition and appearance of the patient were those of the most severe typhoid fever, though, as I remarked to the class, the fever was rather more persistent and higher than is usual in typhoid fever. The amount of tuberculous infection throughout the body was in reality slight. The tubercles were not numerous in the liver, and were only moderately numerous in the spleen. There was no pulmonary tuberculosis, and the serous surfaces were not involved. The pneumonia in the lower lobe of the right lung was not extensive, seemed fresh, and evidently had developed within a few days of the patient's death.—*Medical News, October* 2, 1893, *p.* 633.

2.—AN INQUIRY INTO THE ILL-EFFECTS OF ANTIPYRIN, ANTIFEBRIN, AND PHENACETIN.

D. J. Leech, M.D., F.R.C.P., *Chairman.*
William Hunter, M.D., *Hon. Sec.*

[The Therapeutic Committee of the British Medical Association have recently conducted an inquiry into the importance of the ill-effects which occasionally attend the use of the three chief antipyretic and analgesic agents, phenazone (antipyrin), acetanilide (antifebrin), and phenacetin. The general conclusion of the Committee is that as regards their freedom from ill-effects, so far as the reports sent in show, the drugs may be placed:—(1) Phenacetin; (2) antipyrin; (3) antifebrin. We reproduce here an abstract of the Committee's observations upon the reports sent in to them of the experience of antipyrin. Summaries of the report on antifebrin and phenacetin will be found in the Synopsis of this volume.]

PHENAZONE (Antipyrin).

Nature of the Ill-Effects.—There is great unanimity amongst observers as to the nature of the ill-effects occasionally met with. The only difference of opinion is as to their degree—"slight," or "marked," or "alarming," or "dangerous," as the case may be. They range in severity from the mildest and most evanescent of rashes to the most alarming and even fatal collapse.

The rashes may be dismissed with a word. They are variously described as erythematous, measly, or urticarial in character, with or without considerable accompanying œdema. They have been met with by every observer who has had any extended experience of the drugs. In the great majority of cases they have been the result of idiosyncrasy on the part of the patient, independent altogether of the size of the dose or the nature of the disease.

The ill-effects group themselves clinically into two divisions: (1) Those referable to an action on the nervous system, including the varying degrees of vasomotor disturbance, profuse perspirations, enfeeblement, cardiac depression and irregularity, nervous excitement and collapse, in exceptional cases such marked effects even as loss of power of speech, and complete mania; and (2) those referable to an action on the blood and circulation—namely, the breathlessness, varying degrees of cynanosis, and lividity.

The ill-effects described are, indeed, precisely of the character which one would be led to expect from a consideration of the physiological and therapeutic action of the drug. A drug capable of reducing febrile temperature with the rapidity and

to the degree which antipyrin in many cases admittedly can—still more, one capable of relieving the intense neuralgic pains of functional disturbance with the rapidity and completeness with which antipyrin so frequently acts—must possess a very powerful action on the nervous system, and through it on the metabolic processes going on within the body.

Ill-effects may as naturally be expected to follow the administration of large doses of this drug as excessive stupor and twitchings that of morphine and strychnine respectively. Their occurrence in exceptional cases would not therefore, *per se* prove the drug to be a dangerous one. For this it would be necessary to show that their occurrence was independent of the size of the dose administered.

The relation of ill-effects to dosage employed, becomes thus an important consideration in estimating the harmfulness of a drug.

Their Comparative Frequency.—The mere list of ill-effects is a somewhat formidable one, but it loses much of this character when their frequency of occurrence is considered.

Thus, out of 189 observers who report on antipyrin, no fewer than 138, or 73 per cent., have never observed any ill-effects at all worth mentioning.

Considering how large is the experience of the action of this drug represented in these reports, this large proportion of observers who have no ill-effects to record is very remarkable. Almost more than any other fact could do, it seems to testify to the comparative harmlessness of this drug when properly administered.

Further testimony, no less strong in the same direction, is borne by the experience of the remaining 51 observers (27 per cent.) who describe ill-effects; for of this number 17 expressly state that any ill-effects they had observed were of so slight and trivial a character, and only met with in isolated instances, or after injudiciously long-continued use of the drug, that they could not attach the slightest importance to them.

The number who describe ill-effects is thus reduced to 34. Of these only two venture to give their experience as to their frequency of occurrence in statistical form, one stating that he has met with them in about 1 per cent., the other in about 10 per cent. of cases. Two others state that ill-effects are comparatively frequent in their occurrence, one of these, who gives it in doses of 10 grains, stating that it causes "distinct lowering of the vital powers"; the other, who formerly gave it in 30-grain and who now employs it in 10-grain doses, describing the ill-effects as including "vasomotor pains, lividity, profuse perspiration, tendency to collapse, measly rash, and tendency to pneumonic congestion." The remaining 30 either state that the

occurrence of ill-effects is extremely infrequent, or expressly state that any ill-effects they have observed have occurred as isolated instances in the course of many years' experience of the drug, and extending over many hundreds of cases. So rarely, indeed have they met with any ill-effects, that they attach little or no importance to them, and have in no way been deterred from use of the drug by fear of them.

It is clear, then, if one may be allowed to judge from these reports, that ill-effects following the use of antipyrin are not only relatively but absolutely infrequent in their occurrence. One observer expresses his opinion that they are "rarer than the idiosyncrasies of the iodides or quinine;" and certainly so far as the reports go, this would appear to be the case.

The impression to the contrary, which is widely prevalent, and which is testified to by one observer who states he has never observed any ill-effects himself, but has been deterred from its freer use by the fear of its depressing effect, receives therefore no support whatever from these reports.

Their Importance.—The main object of the inquiry was to ascertain how far the ill-effects occasionally met with were of such a kind as to limit the general usefulness of the drug. The answer given by these reports to this question has been already in great part anticipated by the consideration just given to their frequency. It has been indicated that ill-effects may naturally be expected to follow the injudicious use of so powerful a drug as antipyrin undoubtedly is. To what extent, then, are the ill-effects above recorded to be ascribed to this cause; or, on the other hand, are they directly traceable to the dangerous and uncertain action of the drug itself?

In answering this question, it becomes important (1) to ascertain what is the relation of ill-effects to the dosage employed; and (2) to consider the circumstances of each particular case in which ill-effects have been observed.

1. *Relation of Ill-Effects to Size of Dose.*—Out of 167 observers who record their dosage, 134, or 80 per cent., employ doses of 10 grains or under as their usual minimal doses of antipyrin—30 per cent., commencing with not more than 5 grains; while the remaining 33, or 20 per cent., habitually employ as their minimum doses ranging from 15 to as high as 30 grains. The interesting point, then, comes out that it is almost exclusively in the practice of the latter that ill-effects have been noted.

For among the 138 who have not met with any ill-effects, no fewer than 119—86 per cent.—habitually employ doses of 10 grains or under as their minimal dose; while on the other hand, out of the 51 who describe ill-effects, 37—73 per cent.—are in the habit of giving as their minimum doses as much as 15, 20, and 30 grains.

So far then, as these reports are concerned, there would appear to be a close and direct relation between the size of the dose and the occurrence of ill-effects. The larger the initial dose the more frequent are ill-effects met with.

2. *The Circumstances of Each Particular Case.*—Of the 51 observers who record ill-effects, 17 expressly state that they were of such a slight character, or so rarely met with, as to be of no importance whatever. The remaining report cases in most of which the dose has been 15, 20, or 30 grains, repeated after an injudiciously short interval. A few describe ill-effects produced by doses of 10 grains or under; but, with a few rare exceptions, these have only been after frequently-repeated administration of the drug. The exceptions referred to are obviously cases of idiosyncrasy such as are common with almost every drug. For example: (1) dyspnœa and much nervous excitement, reported in one instance out of many hundreds by a dose of 5 grains; (2) urticaria and salivation following a 10-grain dose twice in the same patient; (3) dizziness and loss of power in legs following a 3-grain dose; (4) lividity, dyspnœa, and swelling of face caused by the smallest doses.

As regards the importance to be attached to these ill-effects, there is almost a consensus of opinion among the observers who have met with them—and that opinion is that they do not affect in any material way the general usefulness of the drug, more especially as an analgesic agent. Only a few express a contrary opinion.

The remaining 214 observers express a contrary opinion. The large majority of them—73 per cent.—have not observed any special ill-effects at all, other than an occasional slight rash, and as an ill-effect this cannot seriously be regarded. And even among those who have met occasionally and in isolated instances with ill-effects, with the exception of the six above noted, the opinion is general: that the usefulness of the drug is in no way affected by their occurrence; that the advantages accruing from its action far outweigh its possible and exceedingly infrequent disadvantages; that ill-effects, when met with, are due to abuse of the drug, either from too big doses or too long-continued use.

It is clear, however, from the reports that the potency of the drug for evil is fully recognised, and the necessity for careful watching of its action and to be careful not to repeat it too frequently is insisted on by a number of observers. Among the precautions to be adopted the most useful and generally recognised one is to begin with small doses, not exceeding 10 grains. To give as a routine practice doses of 20, 30, or 40 grains, as some have been in the habit of doing, or, as in one instance, to give 30 grains every hour, must inevitably be attended from time to time with ill-effects, and that, too, of the gravest character.

Summary.—To sum up, then, in a few words, the results of the inquiry as regards antipyrin: When we consider (1) the large experienee of this drug represented in the reports, and, on the other hand, the comparatively small percentage of observers —28 per cent.—who have met with any ill-effects worthy of notice; (2) that even when ill-effects are recorded, they have occurred as isolated instances out of many hundreds of cases; (3) that in the large majority of these instances the dosage has been injudiciously high or too long continued—that, in short, there has been in most cases a very direct relation between the dosage and the occurrence of ill-effects; the conclusion is warranted that, so far as the reports go, the ill-effects are not of the frequency or importance ascribed to them by a widespread impression. The large majority of observers agree in stating that they are of no importance whatever, and that with reasonable and judicious care they limit in no way the general usefulness of the drug as a therapeutic agent.—*British Medical Journal, January* 13, 1894, *p.* 86.

3.—ON SOME PRACTICAL USES OF BELLADONNA.

By William Murray, M.D., F.R.C.P., Consulting Physician to the Newcastle-on-Tyne Hospital for Sick Children.

There are few remedies which determine the existence of idiosyncrasies in patients more frequently than belladonna. Just as opium, iron, the iodides, mercury, arsenic, or alcohol requires a knowledge of the patients' susceptibility before they can be prescribed with certainty, so belladonna demands a like knowledge, and it must be prescribed with caution until it is known whether any special idiosyncrasy with regard to it exists; otherwise one may find the patient covered with an eczematous rash in twenty-four hours; or a most distressing state of the nervous system, accompanied by disturbance of vision and a most unpleasant dryness of the throat and nose, may be met with. So susceptible are some that the mere application of a small belladonna plaster will produce all the above effects with great violence. On the other hand, one meets with cases where very large doses of reliable preparations can be taken with impunity, and this without the patients having become accustomed to the drug. I remember a case where eight grains of the extract were taken in mistake without much effect on the patient. It seems as if patients do not become accustomed to belladonna as they do to opium; it affects them as decidedly at the end of three months' use of it as it does at the outset. If

the patient will bear a large dose he will bear it when he begins to take it as well as when he has taken it for a month; and, further, the same results are obtained after it has been given for a long time as at the outset of the treatment. I am a little uncertain as to its cumulative effects, but my experience goes to show that one can set up a certain amount of atropism by certain doses, and that this condition can be maintained indefinitely without much variation of dose, so that I infer that it neither accumulates nor loses its effects, although, of course, frequently repeated doses not only keep up but intensify its action; for instance, half a grain of the extract given every night will produce slight dryness of the throat and uncertainty of vision and go no further, while half a grain every four hours will produce delirium in two or three days.

The action of belladonna has been intimately observed by the strictest scientific methods, but I do not propose to refer to these studies in physiological therapeutics; my object is to draw attention to some points in its action which a prolonged observation in ordinary physicians' work has revealed to me. I refer to its action in the following conditions: (1) in the removal of renal calculi during attacks of renal colic; (2) in dysmenorrhœa; (3) in painful defecation depending on (*a*) displaced and enlarged ovaries, (*b*) retroflexion of the uterus, and (*c*) pelvic exudations and adhesions; (4) in obstruction of the bowels; and (5) in typhlitis.

1. *Renal colic.*—I have already published accounts of several cases where large or toxic doses of belladonna given during an attack of renal colic have been followed by the discharge of the calculus per urethram. My success has been confirmed by the experience of others, notably of Dr. Jennings of Jarrow, who informs me that he has twice succeeded in bringing away the calculus by my method. I must again insist on two points: firstly, the drug must be pushed until slight delirium supervenes —that is, by given thirty or forty drops of reliable tincture every two or three hours; secondly, it must be given during an attack of colic. It is of no use except the colic be present. It may relieve the ordinary wearing pain of stone in the kidney, but it will not move the stone except the patient is in the throes of an attack of renal colic. When once this occurs he ought to be prepared with the necessary doses and begin immediately, even before sending for his medical attendant. In such cases careful instructions ought previously to be given to the patient. I cannot say that anything in my experience has given me more pleasure than finding the calculus awaiting me after a few hours of this treatment by toxic doses of belladonna.

2. *Dysmenorrhœa.*—Let it be admitted that dysmenorrhœa is due to spasm, or to mechanical obstruction *plus* spasm, or *plus*

neuralgia, or *plus* inflammatory or congestive action in or connected with the uterus, and there is a large field for the action of belladonna. A patient well under the influence of the drug is not likely to suffer much from spasm, so that the spasmodic element can be eliminated in a case by a full dose or two of belladonna. If after these doses pain still continues there are no doubt other elements in the case—mechanical, congestive, or inflammatory. The neuralgic element is also to a great extent eliminated by belladonna, so that one can get rid of these two causal elements by means of this remedy, and thus the diagnosis is simplified. By far the best method of administering the drug for pelvic pain is the use of the suppository of one grain of the extract repeated every two or four hours. The suppository should be used as soon as the first sign of pain indicates the molimen, and although it is a somewhat disagreeable mode of administration I think the general use of belladonna suppositories for this ailment ought to be advocated, and many sufferers from even slight dysmenorrhœa ought to be provided with this remedy and instructed in the use of it.

3. *Painful defecation, &c.*—With regard to the use of belladonna in those cases where there is spasm *plus* some more organic condition, such as exudation in the pelvic cellular tissue, adherent or displaced ovary, and short lateral ligaments causing fixation of the uterus, I have this to say, that it is a most material aid to other remedies, such as mercury or iodide of potassium. In the case of mercury the best plan is to combine it with belladonna in a suppository such as the following, for continuous use until a perceptible effect on thickened tissues or adherent organs is produced : Mercurial ointment, 2 grains ; extract of belladonna, 1 grain ; oxide of bismuth, 3 grains (to prevent local irritation) ; and oil of theobroma, as much as is sufficient ; to be inserted twice a day. In this way one secures relief of pelvic pain, and, if there is painful defecation, the relief of that too ; for there is no remedy which brings about such a comfortable action of the bowels as belladonna. For this latter purpose it may be added to a glycerine suppository, which secures a free as well as an easy movement of the bowels.

4. *Obstruction of the bowels.*—This leads me to the effect (sometimes wonderful) of belladonna in cases of obstruction of the bowels. I shall record one or two cases, so that its *modus operandi* may be discussed, as I think that they throw some light on the subject. The question to be decided in the use of belladonna for obstruction in the bowels, or ureters, or uterus, is this : is the relief due to relaxation of circular fibres, or is there also a peristalsis set up by it ? Let the following case speak for itself. A few years ago the captain of a ship arrived in South Shields far advanced in strangulated hernia. The late Dr. Heath

operated on him, with relief of the symptoms of strangulation, but the patient remained without any action of the bowels for ten days after the operation, when the stercoraceous vomiting and symptoms of obstruction set in. When I saw the patient the abdomen was immensely distended, the skin shining from tightness and reddened by turpentine and other applications. The pulse was like a thread, the countenance was anxious, and there were great exhaustion and almost constant vomiting. Taking advantage of the almost excoriated abdominal surface, I applied a piece of lint, 20 in. by 20 in., spread with extract of belladonna slightly attenuated with vaseline. In three hours the most decided atropism was developed, and that same evening a copious and continuous action of the bowels took place, with relief of every symptom. Did this relief come from relaxation of some tightly contracted portion of gut? Or was there added to this a setting up of very active peristalsis? Or is it possible that there was no spasm at all, but simply an exhausted passive state of the bowel which was removed by the peristaltic effect of the belladonna? At any rate I think one may infer from the very severe action which took place that something more than relaxation of fibres was produced and that the intestines were roused from their dormant inactivity into violent action by the drug. Against this view there have been seen cases where belladonna has failed to cause an action of the bowels until an enema came to its aid and where most remarkable effects have been produced in apparently hopeless cases of obstruction by the administration of an ox-gall enema. Let it be noted, however, that I have seen the ox-gall, the most powerful of all enemata, fail until atropism was set up in association with it; to obtain the best results, therefore, in these cases one ought to induce full atropism and then give the enema. An additional argument in favour of the propulsive action of belladonna is to be found in those cases of renal colic to which I have referred, where toxic doses of belladonna send the stone down the ureter into the bladder and then out of the bladder per urethram.

5. *Typhlitis.*—A question which oftens presents itself at the bedside is this: Shall I give a purgative—say, caster oil guarded by opium—or shall I rely on belladonna? This question will be best considered in connection with the treatment of typhlitis. Experience derived from a large number of cases of typhlitis has taught me this—that after the acute stage, when the patient has been properly treated by opium, and when one has probably to deal with a large effusion and an impacted bowel, belladonna becomes the most valuable and the only safe remedy. At this stage, I repeat, there is generally a locked-up state of the bowels, partly due to opium and partly to the inflammatory effusion, and woe betide the practitioner *and the patient* if an attempt is

made to move the bowels by any kind of purgative. The best plan of treatment for these conditions is this: firstly, to apply an ointment consisting of extract of belladonna, one drachm, and iodine ointment, one ounce, on a pledget of lint 4 in. by 8 in. over the seat of effusion; and, secondly, to administer a grain of extract of belladonna as a suppository every six or eight hours until atropism is set up, and then to administer an enema of warm olive oil, and, if that fails, an enema of ox-gall and soap with a crystal of washing soda added. In this way one attacks the effusion by iodine, soothes the parts and relaxes spasm by belladonna, and prepares the way for an easy action of the bowels without risk of setting up fresh typhilitic irritation. With reference to the ointment of iodine and belladonna it proved of immense value to me in cases of pelvic exudation and enlarged ovary, as also in subacute pelvic cellulitis. It is likewise very useful in rheumatic joints and in all kindred affections. Of course, there is nothing new in the application of either iodine or belladonna in this way; but my points are: firstly, the combination and, secondly, its continuous application. As soon as the iodine begins to irritate, the belladonna is more rapidly absorbed and its action is thus intensified, and there is obtained the combination of a counter-irritant, an absorbent, and a sedative.—*The Lancet, November* 4, 1893, *p.* 1123.

4.—ON THE TREATMENT OF GOUT.

By James Tyson, M.D., Professor of Clinical Medicine in the University of Pennsylvania.

Whatever diminishes the amount of uric acid in the economy must tend to relieve gout. It is plain that we may diminish uric acid in two ways—first, by confining the gouty person to such food as produces a minimum of uric acid; second, by administering such medicines as will promote its solution and elimination. The first of these constitutes, in the main, the dietetic treatment, the second the medicinal.

This consists essentially in the elimination from the food of all nitrogenous or albuminous principles, which are they whose complete combustion results in urea and incomplete combustion in uric acid. As to these there should be no half course. They ought to be excluded as far as possible from the dietary. I say as far as possible, for it is practically impossible to eliminate them altogether. The foods which are the type of this class should, however, be altogether omitted. Such are the meats of the butcher shops, the albumen of eggs, and the cheeses. The

first include beef, veal, mutton, lamb, and pork, whether salt or fresh, and for the most part fish. As to cheeses, a half-pound of cheese contains almost as much nitrogenous matter as a pound of beef.

The typical foods permissible from the standpoint of composition are milk, butter, the succulent vegetables (except beans and oatmeal), and fruits. To these oysters and lobster may be added moderately, fish (except those containing a large amount of protein), and, where extreme rigidity is not required, poultry in moderate amount; but all butcher's meat should be strictly forbidden.

It is usual, also, to interdict the use of carbo-hydrates, *i.e.*, starches and sugars, as well as the hydro-carbons (fats and oils), but I have never been able to see any reason for this. There is absolutely none from the standpoint of chemical composition, since they are totally without nitrogen, and, so far as my own experience goes, no cause from the clinical standpoint. Only in the event of their producing indigestion and fermentation, with the generation of acids, can they become a cause of gout, and then only, I should say, an exciting cause. I am in the habit, therefore, of permitting the use of rice, potatoes, and other farinacea, and, to a reasonable extent, sugar.

I am glad to be able to say that I am sustained in this view by Sir William Roberts, who says—"The most trustworthy experiments indicate that fat, starch, and sugar have not the least direct influence on the production of uric acid; but as the free consumption of these articles naturally operates to restrict the intake of nitrogenous food, their use has indirectly the effect of diminishing the average production of uric acid."

There are, however, other sorts of ingesta, also entirely or almost free from nitrogen, acknowledged to be both a predisposing and exciting cause of gout,—namely, malt liquors and wines. These are composed of water, alcohol, carbohydrates, and a trace of mineral matters, but no nitrogen. It is not easy at first thought to understand why these substances should be harmful. Experience, however, shows that the stronger wines, such as port, Madeira, and sherry, by their continued use, are very likely to produce gout, while the lighter wines—the clarets, hocks, and Moselle wines—if taken in moderation, rarely produce it. After these, stout, porter, and the strong ales induce gout. Even lager beer, which contains but three per cent. of alcohol, is capable of acting similarly, and I know many men who have been forced to give up this beverage because of this effect. Cider and perry, least of all beverages, predispose to gout. On the other hand distilled spirits, especially whiskey, are almost entirely without effect in producing gout. Why is this? Apparently, the amount of alcohol is not the measure of the

effect, for whiskey, gin, brandy, and rum, all contain more alcohol than any of the wines alluded to. If reference is made to the wines most apt to produce gout, it will be found that they are those which contain a considerable quantity of both sugar and alcohol. Such are port, sherry, and Madeira, all of which contain more than fifteen per cent. of alcohol and much sugar; also sweet champagnes containing eleven per cent. of alcohol. On the other hand some very sweet wines, as Tokay, Malaga, and the higher Sauternes, which contain much sugar, produce gout less rapidly. It would seem that those liquors which contain alcohol in combination with other substances, especially sugar, are potent gout-producers, especially where they excite indigestion.

As to the acidity of alcoholic drinks, their influence is pretty clearly as exciting causes. In this way act the beers, in which both alcohol and sugar are present in small amount, but which are highly acid. An explanation of this fact is less ready from the standpoint that the acute attack of gout is due to a resorption of the deposited uric acid by an alkaline blood, than on the supposition that the attack is due to the irritative effect of uric acid deposited in the joints, because of the diminished alkalinity of the blood induced by the absorbed acid. Whatever be the explanation, few facts in the clinical history of gout are better established than that the ingestion of acid is an exciting cause of attacks.

In the same way act acid fruits, such as strawberries, acid oranges, and lemons. On the other hand to such influence I have known the most divergent response. It is to be remembered that the otherwise harmful effects of the strong distilled spirits, such as are well borne in gout, are no less serious in gouty subjects than in others, and are often induced by the careless prescription of whiskey as less harmful than wines in gout.

First, as to alkalies and alkaline combinations. My experience places the salicylate of sodium easily at the top, and while it is not so rapid in its effect in relieving the pain of an acute attack of gout as it is in rheumatism, it is, nevertheless, an invaluable remedy, excelling all others. During an attack it should be given in doses as large as can be borne. As a rule adult men easily bear 15 grains four times a day, or 10 grains may be administered every two hours. Even larger doses may be given with advantage if borne by the stomach. With relief to the acute symptoms, the dose should be reduced: but, as in rheumatism, the remedy should not be discontinued, and between attacks smaller doses should be kept up for some time. These, however, may be substituted by the natural mineral waters to be presently alluded to.

After the salicylates, the alkaline carbonates have always held a high position in the treatment of gout. Half an ounce a day should be the initial dose, reduced with relief to the acute symptoms, but continued. It may be combined with a little lemon-juice, to improve the flavour, or the citrate of potassium may be given in the same doses.

A most valuable adjuvant to the medicinal treatment are mineral waters. The waters which have heretofore received almost universal approval are the alkaline waters, although those possessing purgative properties also enjoy much reputation. The actual mineral waters which have acquired the greatest reputation in the treatment of gout are those of which sodium bicarbonate is the chief ingredient, to which the calcium bicarbonate is regarded a valuable adjuvant. Such are the alkaline waters of Vals and Vichy in France, Evian-les-Bains in Switzerland, Neuenahr and Fachingen in Prussia, Contrexville and Vittel in the Vosges, France, and Dax in France. Other waters possessed of reputation in the treatment of gout, in which the quantity of alkaline bicarbonate is smaller, owe it to their combined alkaline and aperient properties, chiefly due to sodium sulphate and magnesium sulphate, and belong to the second category of remedies for the treatment of gout. Such are the alkaline and saline waters of Carlsbad and Marienbad in Bohemia, Kronthal in Nassau, and Brides-les-Bains in Savoy. Then there are the saline waters represented by Baden-Baden, Ems, Homburg, Kissingen, Wiesbaden, and our own Saratoga waters and those of Bedford, Pa. Finally, there are the bitter acidulated and purgative waters—Hunyadi Janos and Friedrichshalle in Hungary, Pülna in Bohemia, and Rubinat in Spain—rarely resorted to for gout, but useful as eliminating agents.

The use of these mineral waters is especially indicated in a continuous manner between the attacks, with a view to averting them. Especially useful are the thermal waters in the chronic arthritic complications, in which their internal use is combined with bathing. In this connection may be mentioned Carlsbad and Marienbad, where also the mud-baths are employed, Baden-Baden, Ems, Wiesbaden, Hammon R'Irha in Algeria, available in winter, Plombières in the Vosges, and Dax in France. Homburg and Kissingen are also resorted to for their baths, although the waters are cold.

The second category of remedies—the aperients—are decidedly useful in gout, both as eliminators and to prepare the way for the absorption and prompt action of the alkaline bicarbonates. They are not, however, used at the present day as freely as a century ago, and they are commonly reserved for the acute attack.

Among the eliminating remedies is the time-honoured colchicum, a drug which is of undoubted value in gout, but which, in my experience, must yield the palm to salicylic acid. For a long time its action was inexplicable, and it came to be spoken of as a specific in gout. Professor Rutherford has shown that it is one of the most powerful cholagogues known. This, taken in connection with what we now know of the office of the liver in urea formation, simplifies very much the solution of the problem. This explains, too, why colchicum produces its sedative and anæsthetic effect without necessarily producing purgation. Indeed some, as Sir A. B. Garrod, consider that its effects are best attained without purgation, and Garrod says that if cathartic action is required, it is better to combine some aperient with the colchicum, as when much purging and vomiting result from colchicum, nervous and vascular depression follow. I confess I like to secure a little action on the bowels by increasing the dose gradually, and it is not necessary to produce either violent purging or vomiting.

I am not in the habit of using colchicum in the interval between attacks of gout, and indeed use it less in the acute attacks since the salicylates have come into use, but still value it highly.

The aperients commonly used in gout are the salines, of which the magnesium sulphate is the favourite. Sodium sulphate is also used, and it is the constituent of the most actively purgative mineral waters—the Hunyadi Janos and Friedrichshalle mineral waters — already mentioned, which are now largely used instead. A favourite combination of the older physicians was magnesium sulphate two drachms, magnesium carbonate a scruple, suspended in an ounce of cinnamon-water, two or three times a day, until active purgation results. These two substances may be combined with colchicum, and with it make one of the forms of Scudamore's mixture, a popular gout medicine.

For the relief of the acute attack of gout, leeches, blisters, and cold have all been discontinued of late years, not only because they are useless, but also because their use has been followed by fatal attacks of the so-called internal gout. Warmth and moisture do, however, have a mollifying effect, which is increased if the liquid preparations of opium be associated. Cocaine, which might be expected to be useful, operates only through open surfaces.

All pressure by boots on joints disposed to gout should be carefully avoided, as well as injuries, as such influences undoubtedly act as predisposing causes. Muscular and mental fatigue are existing causes of acute attacks, and should be avoided by the gouty.—*The Therapeutic Gazette, November*, 1893, *p.* 724.

5.—ON THE EXTERNAL USE OF GUAIACOL IN REDUCING HIGH TEMPERATURE IN TYPHOID FEVER.

By J. M. Da Costa, M.D., LL.D.

[The following is an excerpt from a clinical lecture. The temperature chart referred to is not reproduced.]

The usual means for the relief of the high temperature in typhoid and other continued fevers is the cold bath ; it is for the most part safer and better than the internal administration of the antipyretics of the coal-tar series. The present case is one in which you may say that the cold bath was pre-eminently indicated ; and so it was. But in this patient I decided to resort to an article that we had been using with good results in other cases in the hospital for reducing temperature. I might state that I had long been looking for a therapeutic agent which, externally employed, would reduce temperature in cases of fever, without the disturbance incident to the bath. Some years ago I made use of spongings with menthol added to water. The patients liked this treatment extremely, but we gave it up ; for, notwithstanding the attention of our nurses, and the faithfulness with which the sponging was kept up, we did not succeed in keeping down the temperature, when it ran very high, more than a degree below what sponging with cold water alone did.

I do not, save in rare instances, approve of the use of the ordinary antipyretics in typhoid and other low fevers, on account of their depressing effects ; and as I have often had good results from sponge baths, when not employing the general bath, I continued to look around for some agent to be applied to the general surface of the body that would have a marked effect in reducing temperature. In a case of pulmonary tuberculosis that Dr. J. Solis-Cohen and I saw together, he mentioned that he had succeeded in lowering the fever in tuberculous patients by the external application of guaiacol, and he spoke of several patients suffering with tuberculous laryngitis in whom, after the application of this agent to the throat and front of the chest, the reduction was marked, confirming thus the observations made by Bard in tuberculous cases. So far as I can learn, the powerful antipyretic effect of guaiacol when applied to the skin was first pointed out by Sciolla. Bard's observations on tuberculous patients followed, and were soon corroborated by Lannois. The treatment is not regarded as suitable when there are cavities in the lungs, or in cases of pneumonic consolidation, though I believe it has been

used in a few cases of pneumonia. Ordinarily from one to three grams were used for each application, rubbed over the affected area in the lungs, or painted on the thigh or the back, the part being covered with an impermeable dressing.

Upon reflection on these observations, it occurred to me: Why not make use of guaiacol in systemic fevers in the same way? So for the last two months, with the aid of my very efficient resident physician, Dr. Branson, I have been engaged in making observations upon fever cases, especially typhoid-fever cases, the results of which I will now report. I may say that the investigation was begun without preconceptions. The results were positive and conclusive.

The temperature-chart of the case before you is shown herewith. Observe the drop from 105·4 degs. to 98·6 degs. on the night that he was admitted. After the high temperature had been recorded thirty drops of guaiacol were painted upon the surface of the abdomen, in the right iliac region. The remedy was rubbed in for about fifteen minutes. The axillary temperature was then taken every fifteen minutes for two hours, and at periods of one hour afterward. The remedy was applied first at 6.15 p.m.; and at 9.45, three hours and a half later, you observe that the temperature had fallen to 98·6 degs., or nearly seven degrees, surely a tremendous reduction. The next rise was at midnight, when the temperature was 103·4 degs.; therefore a permanent reduction of two degrees was obtained. At 1.30 a.m., the guaiacol was again applied, and one hour later the temperature was 102 degrees; half an hour later it was 98·2 degrees, and the patient had a slight chill. He has had, in all, sixteen of the treatments in seven days. Every one has been followed by a most distinct reduction in the fever. In all of them we notice that this reduction of the temperature is a slow one. We note, also, that the lessening of the fever-heat is not attended by any appreciable difference in the pulse, or by a difference of only a few beats. The reduction is not accompanied by any disturbance of the nervous system, but a chill happened three times in this case, when the temperature fell to 98 degrees, the chilly sensations beginning when the temperature reached 101 degs. The chills were not very marked, however, and were what the patient describes as "dumb chills." As regards the effects of this agent upon the nervous system, I wish particularly to point to their absence. There was no increased debility, no delirium, no depression or sign of collapse, nor, indeed, any manifest disturbance of nerve-function.

I have dwelt in this case on the treatment of the symptom of high temperature by the local applications of guaiacol; let me state that this was everything in the way of treatment that was employed, except that whisky, half an ounce every three hours,

was given to sustain the circulation. For a short time, when pulmonary symptoms were present, ammonium carbonate was given. The general treatment, therefore, was the antipyretic one. It was exactly a case that ordinarily would have been treated by cold baths.

In one case we applied forty drops, but with a temperature not nearly so high as in the other cases. We reduced the bodily heat, it is true, but more than we intended, for we sent the temperature down to 97 degs. This taught us that the proper dose of the agent should rarely be above half a dram; and also that we must proportion the dose to the height of the temperature. In this instance, also, it is to be noted that no other effects were present—no effects upon the pulse, upon the respiration, or upon the nervous system, and no chill, in spite of the great reduction in the bodily temperature.

I have given you the results of a series of clinical investigations, begun with the sole purpose of ascertaining the effect of remedies externally applied in lowering temperatures, and in the hope of finding something that will be effectual besides the cold bath. You will ask: What general statements can we make as to the plan of treatment by guaiacol? What is its applicability, and what are its advantages? Its general applicability is this: It will be of value in all those cases with high fever-temperature—I am now speaking particularly of typhoid and other febrile maladies, and not of pneumonia and inflammatory diseases—in which you would employ the cold bath treatment if the conveniences were present or circumstances would permit.

A very important objection to the cold-water treatment is the disturbance of the patient which it necessitates—the lifting him out of bed, the plunge into the water, and subsequently drying process—all this produces considerable perturbation, and in some cases may be followed by untoward results. There is another disadvantage of the bath, and one which has particularly attracted the attention of the French physicians; it is that when there is a tendency to severe diarrhœa and to deep ulceration there is always a greater likelihood of intestinal hemorrhage when the patient is much moved. Therefore, when such a tendency exists, you would abstain from resorting to the cold-bath treatment; and it is in these cases that guaiacol will be found of special advantage, used in the manner mentioned. Moreover, it is to be preferred in all instances in which much moving or disturbing the patient is to be avoided.

You may ask: What is the relative promptness of action of the methods discussed? In this respect, I think, guaiacol is inferior to the cold bath. When, as in the case shown, the temperature is 105 degs. or more, you will get more immediate

and visible effects from the cold bath. This patient would have had a more speedy reduction of temperature if he had been put in a cold bath than he had from the remedy employed. I admit this. I would, however, call your attention to the fact that the reduction of temperature is more permanent; the fall occurs more slowly and it takes a much longer time for the temperature to rise again than it does after the bath, for we all know that if a patient with a temperature of 105 degs. is put into the bath and his temperature recedes to 100 degs., at the end of a few hours a high temperature is likely to return, and we have to think of giving him another cold bath. In the element of permanency the cold bath is inferior to the treatment we have been discussing.

The mode of employing guaiacol is by rubbing it upon the skin of the abdomen or thigh with a camel's hair brush, the selected area having been first prepared by washing with soap and water. The maximum dose in our investigations in fever cases was fifty drops; and from the effects witnessed I would advise that so large a dose should be rarely used. Thirty drops is about the average dose, although sixty were employed in one case of pneumonia. The guaiacol is to be rubbed in slowly; the surface need not be uncovered during this time, as it can be applied under the bed-clothing, and it is well to cover the surface with a piece of lint and waxed paper. The dose must be proportionate to the height of the fever. It would be proper with a temperature of 103 deg. not to exceed 20 minims at the first trial. In one instance of malarial fever in an anæmic subject in the ward of one of my colleagues, an application of 30 drops when the temperature was 103·6 deg. caused it to drop to 97 deg. The guaiacol may be also applied to the skin without rubbing it in, only covering the part with lint and waxed paper. The action is the same, though not so rapid nor so perfect. The quickest way is to paint the guaiacol on the surface, then to rub it in with the hand. Five minutes are enough for the purpose. The local sensation is not unpleasant, being like that of menthol.

How does it act? Is it by absorption through the bronchial mucous membrane or by cutaneous absorption? I believe that its effects are produced by absorption by the skin and its entrance into the circulation by this channel; being carried to the heat-centres, it acts as an anti-thermic agent. It belongs to the series of wood-tar products, and it acts apparently without the depression that follows the use of antipyrin, phenacetin, and other remedies of this group of the coal-tar products. Moreover, though there is some action on the skin, the sweating is not nearly so great.

In conclusion, I would advise you to watch the urine, for in all cases of administration of medicines by the skin it is chiefly

by the urine that the medicine escapes from the system. The urine is for the most part somewhat increased, but I can also say that in all of our cases in which we used the guaiacol there was no albumin in the urine, and no signs of kidney irritation were detected.—*Medical News, January* 27, 1894, *p.* 86.

6.—ON THE USE OF SUBLIMED SULPHUR AS A LOCAL APPLICATION IN DIPHTHERIA.

By Christian G. H. Bäumber, M.D., F.R.C.P., Professor of Clinical Medicine in the University of Freiburg.

In No. 1714 of the *British Medical Journal* for November 4th, 1893, p. 992, Mr. Robert Fair Frazer recalls the attention of the profession to the local use of sulphur in the treatment of diphtheria. Since first recommended in 1866 by Lagauterie. this remedy has repeatedly found supporters in various countries, but has never come into more general use. This may be due to the manner in which, and the circumstances under which, it has occasionally been used, partly, perhaps, also to the unfavourable opinion pronounced upon it by such men as Jacobi, of New York, and Oertel, of Munich, than whom, it is true, few physicians can claim a more extensive experience with diphtheria. Nevertheless, having for years had the opportunity of closely watching a great number of cases of diphtheria in my own hospital practice, I could not help being impressed by the effects of the application of powdered sulphur to the affected parts. These effects were infinitely better than those of any of the multifarious local applications which I had tried before, and having almost exclusively used it now for more than seven years, I do not hesitate to come forward in support of the renewed recommendation of this remedy by Mr. Frazer, and to plead for its more extensive use.

I was first induced to try it by the recommendation given to this local treatment by Professor von Liebermeister, in his lectures on "Special Pathology and Therapeutics" (Leipzig, 1885, vol. 1, p. 232), where he says—"As a local application I generally use powdering with crude sublimed sulphur, by abundantly applying with a thick, soft camel-hair brush the dry powder to the diseased mucous membrane. This powdering of the pharynx with sulphur is, according to circumstances, repeated every hour or every two hours, or only three or four times a day." On the strength of several years' experience I entirely concur with Professor Liebermeister's further

remarks—"I have the impression that by this treatment, when commenced early, I attain more than by any other which I had tried before, and that with these applications the cases, on an average, take a considerably more favourable course than without it." I have repeatedly seen cases, in which gangrene of the uvula and part of the soft palate seemed unavoidable, take a favourable turn in a few days, the membranes becoming detached and the swelling going down, leaving much less loss of substance behind than was to be feared when first seeing the case. With less extensive disease we could frequently notice the first effects of the application to consist in a somewhat increased injection (not congestion) of the mucous membrane on the borders of the exudation, the latter becoming more sharply defined at its edges after a few applications, and then beginning to get loose and be detached.

In the majority of fresh cases of diphtheritic sore throat, as well as of lacunar tonsillitis, two or three applications a day seemed sufficient, the patients in the meantime, when able, gargling with a weak solution of permanganate of potash, and being subjected to such general treatment as the case required (cool baths or the wet sheet, or occasionally a dose of antipyrin when there was high pyrexia, and great care as to feeding by mouth, or, if necessary, by the rectum).

How the sulphur acts in these cases I am unable to say, and I may mention that there seems to be no particular difference in the action of sublimed or precipitated sulphur. Nor am I aware that, as yet, any experiments have been made with regard to the action of sulphur on the particular bacteria which cause diphtheritic and other kinds of sore throats (Loeffler's bacilli and streptococcus chiefly). But while anxious for the scientific explanation of the facts so frequently observed, we need not delay making the experience gained more generally useful.

The action of this remedy being a merely local one, its principal field of usefulness will be diphtheria of the fauces, where it can be applied directly and abundantly. The larynx, also, and in certain cases the upper part of the trachea, may be reached by using a curved insufflator for blowing in the powder. But no effect can, of course, be expected when the disease extends into the bronchial tubes, or when the general blood poisoning has gone beyond a certain degree, nor even locally, where extensive sloughing has already taken place in the throat, and when, in consequence thereof, rectal feeding is the only, and then mostly insufficient, means to grevent exhaustion.

I am unable to say whether remedies which have more recently been recommended, such as pyoktanin or the peroxide of hydrogen, which has found such warm supporters in America,

give even better results than the sulphur, as, especially in severe cases, I did not feel justified in foregoing the benefits of a remedy of whose efficacy I have had ample personal experience.—*British Medical Journal, March* 3, 1894, *p.* 459.

7.—ON THE LOCAL TREATMENT OF DIPHTHERIA BY HYDROGEN PEROXIDE.

By Francis H. Williams, M.D., Boston, U.S.A.

At present local remedies are our best means for the treatment of this disease, and obviously they are best adapted to those cases that are seen early, before much of the poison has been absorbed, and further, to cases in which the membrane is accessible.

Given a patient in whose throat is a patch of membrane filled with bacilli that reproduce themselves in a very short period and which generate a soluble and most virulent poison; a membrane that may be thick and tough, and over the surface of which there constantly passes a stream of saliva that will quickly carry away the remedies applied to it; situated in a region to which applications can be made for short intervals only, and even then is not easy of access; what should we do? It is worse than useless to tear off the membrane; this causes bleeding; the membrane rapidly returns, and over a larger area.

The strong hydrogen peroxide acid solutions, by which I mean strength of 25 to 50 volumes or more, are efficient germicides in the laboratory, and they have besides the special quality of breaking up and disintegrating certain portions of the diphtheritic membrane without injury to the healthy tissues, thus rendering the bacilli more accessible.

Having found a substance that has no poisonous properties, namely, a strong solution of hydrogen peroxide, that is shown to be an efficient germicide in the laboratory, let us see what it will do clinically. I was so situated that in most of the cases in which the diagnosis was carefully made by cultures, the strong hydrogen peroxide solutions were not used, and in most of the cases in which the peroxide treatment was used the cultures were not made. I have made some use, chiefly in 1892, of strong peroxide solutions, in 74 cases in all; 16 of these died and 58 recovered; but as, in most of these, the diagnosis was not based on cultures, it is impossible to state exactly how many were diphtheria and how many pseudo-diphtheria. In the 16 cases that died the patients entered the hospital after they had

been ill an average of five days, so far as I could learn. Eight of these died within one to three days after entrance. There was not much opportunity for treatment, and the hydrogen peroxide was omitted when the patients seemed too weak. Two entered the hospital on the last day of my service, and the strong solutions of hydrogen peroxide were employed on that day only. These patients died about two and four weeks later, respectively. In four cases the membrane was in or extended to inaccessible parts of the throat, and in but one of these was there temporary improvement. In the fifteenth case the patient had diphtheria (as shown by subsequent paralysis) and scarlet fever simultaneously. There was local improvement, but the child died about the fifteenth day of the disease. In the sixteenth case scarlet fever developed on the twelfth day of the disease, when the throat was nearly clear. The patient did well until the fifteenth day, then had suppurating glands and died on the nineteenth day of the disease.

I have found nothing that will remove the membrane so well as the strong solutions of hydrogen peroxide.

The *drawbacks* of the strong solutions of hydrogen peroxide consist first, in the fact that the acid solutions, which are stronger germicides, cause pain, due to the acid, which lasts about one minute. Some patients object to this very much; others, including children, will permit the use of a 50-volume solution with little fuss. The discomfort is due to the acids rather than the hydrogen peroxide; if the solutions are neutralised the discomfort is largely obviated. We may disguise the acid by adding sugar, as in lemonade, showing that it is the acid taste that is disagreeable rather more than the so-called irritation. Instead of adding sugar we may apply cocaine to the throat before we use the hydrogen peroxide solution. The amount of acid in the 25-volume solution which I used was $\frac{1}{2}$ per cent., in the 50-volume 1 per cent.

Second.—Strong solutions of hydrogen peroxide have not been easily procured, nor do they bear transportation well, but these inconveniences may be readily surmounted. The apothecary or physician has merely to evaporate a 10-volume solution in a shallow, open dish, over a water-bath, or in a range or stove, to obtain a solution of either about 25 or 50 volumes. The initial solution should not be too acid, the dish should not be of metal and should be free from organic matter.

Third.—Hydrogen peroxide is a bleaching agent and should not be brought into contact with the hair or with coloured fabrics, but it does not injure white cotton or linen. One should avoid getting it on the fingers, as it may, after a few minutes, whiten a thickened epidermis and cause a sensation of pricking.

The *advantages* of the strong hydrogen peroxide solutions are that they are good germicides and are not poisonous nor harmful to the mucous membrane; they cleanse a foul throat and break up and disintegrate certain portions of the diphtheritic membrane, thus rendering the bacilli more accessible. They likewise assist in diagnosis, for when the hydrogen peroxide, even in weak solution, is applied to the throat where there is any trace of membrane, it causes it to assume a white colour from the presence of fine foam which is made by the liberation of the oxygen gas. It thus becomes a useful agent in detecting spots of membrane earlier than they would be apparent in any other way, and thus indicates the areas to which the treatment should be directed. With this end in view, the throat may be sprayed or the mucous membrane may be swabbed with dilute hydrogen peroxide.

No rule can be given for applying these solutions that will cover all cases. In a general way it may be said that the strong solutions of hydrogen peroxide containing about $\frac{1}{2}$ per cent. of acid, made up chiefly of hydrochloric or sulphuric acid, should be gently but thoroughly applied every four hours during the night and more frequently during the day for the first few days. The 25-volume solution may be used in spray; the 50-volume may be applied, a drop or two at a time, on a swab until the membrane is removed or much diminished, or in certain cases the 50-volume solution may be applied with the syringe. Even a stronger solution than 50 volumes may be used for resistant membranes. It is well to use cocaine before applying the peroxide. By the help of bromide at night, the patient loses very little sleep in being aroused for the local treatment. Every precaution should be taken to spare the patient's strength, and it is not necessary that the head should be raised from the pillow while the applications are being made.

As the bacilli are not limited to the diphtheritic membrane, antiseptics should be brought into contact with other portions of the throat and nose than those covered with membrane, by such means as sprays and gargles, as a prophylactic measure.

Any good atomiser, not of metal, that will reach the desired spot conveniently, or a swab made by twisting a small piece of absorbent cotton about the end of a small stick, may be used.

Diphtheria usually begins on the tonsils, and, to avoid serious consequences—for instance, those resulting from the spread of the membrane to the neighbouring air-passages—no moments should be lost before beginning treatment. Until we have found something that will find and kill all the bacilli at a single blow, any local treatment must be frequently applied to be efficient, as the bacilli reproduce themselves in a very short period. From these frequent applications during the early days

of the disease I see, at present, no appeal. The use of the strong hydrogen peroxide solutions reduce the number of applications to a minimum, as the more thoroughly the membrane is disintegrated and removed the less frequent is the necessity for treatment and the shorter its duration.

In those cases that are first seen several days after the onset of the disease, and when the patient has become weakened by the poison generated by the bacilli, we must weigh carefully the loss of strength resulting from frequent applications, especially in very young children, against the gain to be derived from the removal or destruction of the bacilli. Further, if the patients have been ill some days when first seen, the chances of recovery are much diminished, and in some cases no treatment as yet at our command is of avail; just when the physician shall renounce all hope of aid from local treatment each one must, of course, decide for himself in the individual case. The usefulness of good local treatment is in direct ratio to the stage of the disease, the accessibility of the membrane, the age and strength of the patient, and the ability of the practitioner to apply it with the least tax on the patient's strength combined with the greatest destruction of the bacilli.—*American Journal of the Medical Sciences, November*, 1893, *p.* 525.

8.—THE BACTERIOLOGICAL DIAGNOSIS OF DIPHTHERIA.

By W. T. Councilman, M.D., Shattuck Professor of Pathological Anatomy, Harvard Medical School.

There are two methods by means of which diphtheritic bacilli, when present, may be detected. One is by means of the direct microscopical examination of the membrane. Small pieces of the membrane can be pulled off with forceps, or a pledget of cotton may be rubbed over the surface of the membrane, and afterward rubbed directly over cover-slips. These are then heated and stained by the usual methods. The staining which we have found uniformly best suited is the Loeffler solution of methylene-blue, consisting of methylene-blue dissolved in a weak solution of caustic potash. The bacilli are frequently present in large numbers; in other cases but few are seen. They may be distinguished by their form alone from the other organisms of the mouth, though there may be organisms present which very closely resemble them in form. As a rule they are not homogeneously deposited over the preparation, but are

more apt to be found in small masses and clumps. The organisms with which they are most frequently found associated are the various micrococci, which may be arranged either in chains or in the staphylococcus form. Along with the micrococci there may be present long or short bacilli varying greatly in size and curved forms. In rare cases they may be found in great numbers unmixed with other forms. As a general rule, the more abundant the various organisms which are found, the less the likelihood of the case being one of diphtheria.

While this method will certainly yield valuable results in the hands of the experienced investigator, there is always a considerable amount of difficulty in distinguishing the diphtheritic bacilli from other organisms. When present in large numbers and arranged in masses they can be readily distinguished, but when very few or single organisms are present it is impossible to distinguish them by form and size alone, and we have no method of distinguishing them by staining such as we have in the cases of tubercle bacilli. A much readier way is found in the methods of culture. In this we have, as the most available method to procure the material for culture, a pledget of cotton closely wrapped around the end of a wire. A number of these wires are prepared, enclosed in test-tubes and sterilised by heating in the hot-air steriliser. After sterilisation they are carried to the wards still enclosed in the test-tubes. The wire is then removed from the tube, and the cotton pledget is rubbed over the membrane. Frequently small pieces of it will adhere to it; then the test-tube is labelled and sent to the laboratory. At the laboratory cultures are made on the blood serum and sugar bouillon which was recommended by Loeffler. This is prepared in large quantities and kept on hand. It consists of blood serum obtained from the slaughter-house and mixed with one-fourth its volume of bouillon containing 1 per cent. of grape-sugar. This is then poured into test-tubes, from 10 to 15 c.c. being placed in each one, and these are then sterilised in a leaning position to give a large extent of surface. At first we always used the fractional sterilisation, heating the material on successive days up to a temperature of 62°. So many of the tubes spoiled, however, that lately we have adopted the plan of heating it at once up to the boiling temperature, and then sterilising it on successive days, just as we would with any other medium. The heat coagulates the blood serum and renders it opaque. The organisms grow on it with great readiness, and the opacity interferes very little with the proper recognition of the colonies. We have tried various media, human blood serum among others, but the organisms grow very much more readily

upon serum derived from cattle than upon any other medium. The pledget of cotton on the end of the wire is rubbed over the slanting surface of the test-tube, which is then placed in a warm chamber. At the end of twenty hours, if diphtheritic bacilli are present an abundant growth will be found on the surface of the test-tube. The organisms grow as small isolated colonies, frequently scattered over the surface. Of course the swab from the throat contains in almost all cases numerous other organisms, as well as the diphtheritic bacilli, and if all these organisms grow equally well it would be impossible to distinguish the different species. Fortunately, however, but few of the organisms found in the throat find suitable conditions for their growth in our ordinary modes of culture. The diphtheritic bacilli may be found alone, but usually other forms, both micrococci and bacilli, are found with it. The micrococci are usually the diplococcus lanceolatus, streptococci, and staphylococci. Streptococci are more frequent than other forms. One of the most common bacilli found is a short organism growing in pairs with pointed extremities. There is nothing absolutely characteristic of the macroscopic appearance of the growth of the diphtheritic bacillus in these primary cultures, although pure cultures on test-tubes made from these primary cultures are more characteristic. It is impossible to tell by the macroscopic appearance the colonies of diphtheritic bacilli from the colonies of both streptococci and staphylococci. After twenty to twenty-four hours the cultures are removed from the culture chamber and the various colonies are examined microscopically. The masses of bacilli in the colonies are recognised in this way much more easily than by the simple direct examination of preparations made from the throat. In doubtful cases it is always well to make inoculations on animals.

There can be no doubt of the importance of such investigations. When we can make a perfectly definite diagnosis, we know what we are doing; we know that in certain cases we have to do with the true diphtheritic organism, and in other cases with only a mild and possibly non-infectious organism. It is impossible to separate the cases of diphtheria from other pseudo-membranous inflammations in any other way. We know that cases in which the virulent organism is found may run a very light clinical course, and without the presence of the bacillus we might not think it necessary to guard against infection. In the absence of a definite diagnosis made by bacteriological investigation, the only safe way is to consider every case in which pseudo-membranous inflammation of the throat is found, whatever its character, however mild the clinical symptoms may be, as a case of true infectious diphtheria.—*The American Journal of the Medical Sciences, November*, 1893, *p.* 549.

9.—THE FEATURES WHICH DISTINGUISH EPIDEMIC ROSEOLA (ROSE RASH) FROM MEASLES AND FROM SCARLET FEVER.

By Clement Dukes, M.D., M.R.C.P., Physician to Rugby School.

A.—The Distinguishing Characteristics between Epidemic Roseola or Rose Rash and Morbilli or Measles.

Epidemic Roseola or Rose Rash.	*Morbilli or Measles.*
1. *Premonitory symptoms*—In many instances none; no headache; no vomiting; no catarrh; no cough, but frequent sore throat. If the attack be severe, some malaise, anorexia, and drowsiness will exist.	1. *Premonitory symptoms.*—Usually considerable malaise, headache, anorexia, vomiting, watery eyes, catarrh, and characteristic cough for about three days.
2. Its *season* is spring and summer.	2. Its *season* is spring and summer.
3. *The incubation period* is usually eighteen days, but with a range of nine to twenty-one days.	3. *The incubation period* has a range of seven to eighteen days from exposure. Rash appears on fourteenth day.
4. *The eruption.*—In the *measles* type this appears as minute *rosy-red* dots, not patches. It shows itself first behind the ears, and on the *scalp and face*, especially on the oral circle; from these situations it extends to the neck and chest, and gradually covers the entire body. The minute dots become larger and gradually coalèsce, forming patches, of the bat's wing pattern, indistinguishable from measles.	4. *The eruption* appears on the fourth day from the commencement of the malaise and catarrh. It shows itself behind the ears in the first instance, then on the scalp and forehead, and gradually spreads all over the face, body, and limbs, forming crescentic blotches. The eruption is papular in character and *brick-red* in colour, and may gradually assume a blue-red tint, but it never assumes a bright *rose red.*

5. *Additional symptoms:—*

(*a*) *Throat.*—The fauces look dry, with a dark motley red hue.

(*b*) *Eyes.*—The conjunctivæ are pink-red and suffused.

(*c*) *Glands.*—The lymphatic glands throughout the body are enlarged, tender, and hard like peas—notably, the posterior cervical, the axillary, and the inguinal.

(*d*) *Desquamation.*—In the measles variety there may, perhaps, be a little branny desquamation, but frequently there is none.

(*e*) *Kidneys.*—Rarely affected, and then only with a transient trace of albumen.

(*f*) *Diarrhœa.*—Never.

6. *Sensations of illness.*—Even with a full eruption, as intense as in measles, the patient usually states that he does not feel ill, although there may be other indications to show that he is really ill.

7. *Tongue.*—Clean or slightly furred, never coated with a thick white fur, which peels on the fourth day.

5. *Additional symptoms:—*

(*a*) *Throat.*—The fauces are red and swollen, but differ from the fauces of rose rash.

(*b*) *Eyes.*—The conjunctivæ are very red, watery, with marked photophobia

(*c*) *Glands.*—Not usually affected. The posterior cervical rarely so, and then not markedly; but the bronchial glands are always enlarged.

(*d*) *Desquamation.*—There is a little branny shedding of the epidermis, varying according to the intensity of the rash.

(*e*) *Kidneys.*—Not affected.

(*f*) *Diarrhœa.*—Very frequent.

6. *Sensations of illness.*—I have been repeatedly informed by strong, as well as by delicate, boys that they have never felt so ill in any illness. They continually suffer from delirium and complete anorexia, and lie quite prostrate.

7. *Tongue.*—Slightly furred, but not coated.

8. *Pulse.*—Normal or slightly increased in frequency, but always bearing a ratio to the temperature.	8. *Pulse.*—Usually accelerated, and may be very feeble and dicrotic, but always bearing a ratio to the temperature.
9. *Temperature.*—Varying from normal to 103° or 104° F.	9. *Temperature.*—Usually heightened from 101° to 104° F.
10. *Course of illness.*—The symptoms, however severe, pass off in a few days.	10. *Course of illness.*—Convalescence more protracted, often considerable prostration.
11. *The duration of infectiveness.*—From ten to fourteen days where efficient disinfection is in force.	11. *The duration of infectiveness.*—From fourteen to twenty-one days, according to the severity of the illness, where efficient disinfection has been carried out.
12. *Protection.*—The attack affords no protection against measles.	12. *Protection.*—The attack affords no protection against the scarlet fever or measles variety of rose rash.
13. *Sequelæ.*—Practically none.	13. *Sequelæ.*—Pneumonia, bronchitis, pleurisy, ophthalmia, otitis, &c.
14. *Termination.*—Usually complete recovery in a fortnight.	14. *Termination.*—Usually complete recovery in a fortnight at the school age; but sometimes followed by a prolonged period of ill-health.

15. *Treatment* in both cases is very similar.—The patient requires about five days in bed, followed by three days in-doors, then about six days in the fresh air, and, after complete disinfection, may safely mix with others.

It must be noted that abortive cases of roseola are frequent, and their occurrence difficult to detect.

There are also two other eruptions which have a close resemblance to that of epidemic roseola; the one is *roseola simplex*, which arises in hot weather, after chill, or as the product of various indigestible articles of diet. It is readily distinguished, however, by the absence of enlargement of the lymphatic glands. The other eruption is that occasioned by handling *caterpillars*, which boys are very fond of keeping. I discussed this question fully in a paper in *The Lancet* in 1881.

I may also mention a medicinal eruption occasioned by copaiba, which Mr. Hutchinson called the morbillio sine catarrh.

B.—The Distinguishing Characteristics between Epidemic Roseola or Rose Rash and Scarlatina or Scarlet Fever.

Epidemic Roseola or Rose Rash.

1. *Premonitory symptoms.* — In many cases none, even where there is a copious eruption; neither headache, nor vomiting, nor catarrh, nor cough, but frequently sore-throat.
2. Its *season* is spring and summer.
3. *The incubation period* is usually eighteen days, but with a range of from nine to twenty-one days.
4. *The eruption* is usually the first noticeable symptom, and will cover the whole body with a considerable rash in a very few hours. It has a bright *rosy red* hue, is raised somewhat from the surface of the skin, and often occurs in patches, with well-defined edges. The sensation of heat of the skin to the touch, even where the rash is very full, is much less than in scarlet fever.
5. *Additional symptoms:*—
   (*a*) *Throat.* — The fauces are usually reddish, but bear little relation to the extent of the rash.

Scarlatina or Scarlet Fever.

1. *Premonitory symptoms.*— Usually malaise for a few hours, and frequently vomiting. If the attack be slight the patient only feels tired, but usually complains of some amount of sore-throat.
2. Its *season* is autumn and winter.
3. *The incubation period* is from two to three days, with a range from a few hours to seven days; it very rarely extends beyond the fifth day.
4. *The eruption* is diffuse, *dusky red*, papular in character, and appears first behind the ears. It presents a *goose-flesh* appearance. No isolated dots at any stage, or patches raised and with well-defined margins. It appears early about the clavicles and on chest and the covered parts of the body. Not so full as in epidemic roseola and markedly hot to touch.
5. *Additional symptoms:*—
   (*a*) *Throat.*—The appearance of the fauces may vary from the most insignificant affection to an intense dusky redness, with marked swelling, showing sometimes white spots of inspissated secretion; and the severity of the throat affection bears usually a distinct relation to the skin eruption.

(*b*) *Eyes.* — The conjunctivæ are pink and suffused.

(*b*) *Eyes.*—Normal.

(*c*) *Glands.*—The lymphatic glands throughout the body are enlarged, hard, and tender, and feel like peas. Those mainly affected are the posterior cervical, the axillary, and the inguinal.

(*c*) *Glands.*—The lymphatic glands of the throat and neck can be scarcely detected during the first few days, but subsequently they may be enlarged *in proportion to the severity of the faucial affection.*

(*d*) *Desquamation.*—In the scarlet fever variety the desquamation may be slight, or as complete as possible, even extending to a general desquamation of the hands and feet: but the desquamation bears no relation to the intensity of the eruption, for it often happens that a very full eruption may be followed by little or no desquamation, and what does occur is over in a week or two. On the other hand, a full eruption may be attended by a general peeling as free as in the worst cases of scarlet fever, but always in small scales rather than in flakes or sheets.

(*d*) *Desquamation.* — The desquamation always bears a ratio to the extent of the eruption. A copious eruption signifies a free desquamation, while a scanty eruption is followed by a sparse peeling, which, however, does not cease for many weeks. *It commences invariably by a peeling of the tongue on the fourth day*, which extends to the lips and is followed by peeling of the face and behind the ears; one of the easiest places in which to detect it early is on the ears themselves. Desquamation is in shreds rather than scales and very free about hands and feet.

(*e*) *Kidneys* rarely affected.

(*e*) *Kidneys.* — Albuminuria very frequent. Acute nephritis very liable unless the treatment be appropriate.

6. *Sensations of illness.* — Where the eruption is slight there is no illness of any kind; and where the eruption is copious the *feeling* of illness is sometimes scarcely apparent, although I have seen boys really ill with it.

7. *Tongue.*—Clean or slightly furred, never coated with a thick white fur, which peels on the fourth day, leaving the tongue raw.

8. *Pulse.* — In slight cases normal, and where the case is a well-marked one the pulse is quickened, but bears a ratio to the temperature; that is to say, where the pulse is accelerated the temperature is raised to a proportionate degree.

9. *Temperature* varies from 98·4° to 103° or 104° F.; but even with a very extensive rash the temperature is not necessarily high.

10. *Course of illness.* — The symptoms, however severe, pass off in a few days, leaving comparatively little feeling of illness. The glands continue enlarged and tender for about three weeks, and I have seen the submaxillary glands swollen. Desquamation continues for two or three weeks, or longer.

6. *Sensations of illness.* — In slight cases there is no apparent illness; but I have never seen a case with a severe eruption where the patient was not really, and also felt, very ill.

7. *Tongue.* — Coated with a thick white fur, peeling off from the tip and edges on the fourth day leaving the "strawberry" tongue.

8. *Pulse.*—Even in slight cases it is accelerated, and in severe cases very greatly quickened, and always out of all proportion to the height of the fever; that is to say, even with a temperature only just above normal (99° F.) the pulse will be very rapid (120).

9. *Temperature* ranges from 99° to 106° F., but never increased in the usual ratio to the pulse. A full rash always means a high temperature.

10. *Course of illness.*—The illness gradually subsides in from four to seven days. Desquamation commences as eruption fades, and continues for from seven to eight weeks or more, and lasts longest on the hands and feet.

11. *The period of infection.*—I do not know any illness which is so infectious in its earliest stage, even before any symptoms are manifest. It arises from this cause that schools suffer to such an extent when once it has found entrance. In its later stage, even while desquamation is taking place, it is not infectious beyond two or three weeks, after thorough disinfection.

12. *Protection.*—The attack affords no protection against scarlet fever.

13. *The duration of infectiveness.*—From ten to fourteen or even twenty-one days where efficient disinfection is in force.

14. *Sequelæ.*—Practically none; but I have seen the submaxillary glands enlarged.

15. *Termination.*—Usually complete recovery in a fortnight.

11. *The period of infection.*—The least infectious of any illness in its early stages. After the first forty-eight hours it is very infectious, but how long the infection lasts I am not prepared to say. Until this can be ascertained the only safe rule is to assume that it may last as long as desquamation itself, although I am quite clear that this is inaccurate.

12. *Protection.*—The attack affords no protection against the scarlatina or measles variety of rose rash.

13. *Duration of infectiveness.*—From six to eight weeks or more—i.e., when the desquamation has ceased; but infection probably does not last so long after efficient disinfection.

14. *Sequelæ.*—Nephritis suppuration of the submaxillary lymphatic glands and others, otitis, rheumatism, and endocarditis.

15. *Termination.*—Usually complete recovery, but sometimes a prolonged convalescence on account of the sequelæ; and the disease shows a high mortality in the very young.

16. *Treatment.*—Every case of scarlet fever, however slight, requires twenty-one days of lying in bed absolutely. The patient should be clothed in a flannel night-shirt, and the skin daily greased with carbolic or eucalyptus oil. No food should be given for the first week, except milk and farinaceous food, however slight the illness, for this helps to guard against nephritis. The patient should not be permitted to join his friends for six or eight weeks, but I do not think it

essential to isolate cases until all desquamation has ceased *from the hands and feet*, for this process sometimes occupies several additional weeks. I have acted on this assumption for many years without harm, even transferring boys to their homes. Of course, complete and thorough disinfection is imperative. In roseola, on the other hand, the patient may be permitted to get up on the fifth or sixth day or as soon as his strength permits, irrespective of the desquamation, and without danger from sequelæ. He then requires three or four days indoors, followed by five or six in the fresh air ; and may safely join his schoolfellows at the end of from fourteen to twenty-one days, notwithstanding desquamation, provided the disinfection has been thorough.—*The Lancet, March* 31, 1894, *p.* 793.

10.—ON THE PARASITE OF MALARIA.

By Patrick Manson, M.D., M.R.C.P.

[The following is an excerpt from a Clinical Lecture delivered at University College Hospital.]

It was not until as recently as 1880 that the true germ, or what many others, as well as myself, believe to be the true germ of Malaria, was discovered by a French army surgeon (Laveran) in Algeria. At first the discovery was in a great measure ignored ; but gradually the truth, as it ever will, is making progress, and now Laveran has a great many followers who firmly believe in the existence of the organism he described, and the great *rôle* it plays in nature and disease. Although there are a great many sceptics, it is only a matter of time, I am convinced, before the plasmodium malariæ, or whatever name we elect to call Laveran's bodies by, will be universally recognised by pathologists. The reason for the long delay in discovery, and also the reason of the reluctance so many observers display in accepting the discovery, is very evident to anyone who has worked much at the subject. It is entirely a matter of technique —and very simple technique too. Unless certain methods—very simple ones they are, but none the less necessary—are observed in preparing malarial blood, the parasite will never be seen. Laveran was the first to use this technique in the examination of malarial blood, and he found the parasite ; and those who follow his methods can at once confirm every statement of fact he makes. I shall first tell you how to set about this, and I am sure that, provided you follow to the letter the directions I give you, you will readily find the parasite in every

case of genuine malaria which has not been recently and energetically treated by quinine. The ordinary way of examining blood is to prick the finger tip, take up a little of the blood which exudes on a cover glass, and lay it on a slip. Prepared in this way the blood-corpuscles are seen to lie in rouleaux, with islands of serum between them. The individual corpuscles which make up the rouleaux are so placed that their edges are directed towards the observer ; therefore anything which the corpuscles may happen to contain is not to be readily seen. Now in blood so prepared it is quite a chance, and a very poor one, that you will see the malarial organisms, even though they are present in abundance—one or two, perhaps, in every field. To see the parasite the slide must be so prepared that the corpuscles shall lie not only in a single layer of great tenuity, but they must also lie flat on their faces, so to speak, so that the entire surface and circumference of each individual corpuscle shall be clearly visible. In slides so prepared, to find the malarial parasite is only a question of a little patience and a magnifying power of anything over 500 or 600 diameters. To prepare such slides you should set about it something in this way. Clean very thoroughly half a dozen slips and cover-glasses ; they must be quite free from grease, dust, and grit of all description ; use a little ether and alcohol if necessary, with which to clean them. The cover-glasses are better if they are very thin and about five-eighths of an inch in diameter or square. When your glasses are all ready and lying handy ligature the finger in the usual way, wipe it clean and quite free from all moisture, and then prick the pad very lightly. You must not prick it so that a large drop of blood shall well up. A droplet about the size of a pin's head is best. Better wipe off the first droplet that exudes, because this often contains grease, epithelium, bacteria, and other undesirable bodies from the prick in the skin. When a second droplet has welled up, or been gently squeezed out, touch its apex lightly with the centre of the cover-glass and then drop this at once on a slip. Do not press it down or glide it on the slip, but drop it. If the manipulation has been successful the blood will run out at once between the cover-glass and slip in an exceedingly fine layer, in which, after a time, the corpuscles will be found lying flat, each one being more or less isolated and distinct. You had better prepare half a dozen slides, for most probably several of them will be failures. Be careful in taking up the blood from the patient's finger not to let the cover-glass touch his skin ; in that case it will be sure to carry off with it some dirt or epithelium and the blood will not run out properly. You may seal the edges of the cover-glass with vaseline if your examination is not to be made immediately, or should you propose to make it a long one. This will prevent

evaporation, and consequent distortion of the corpuscles. Preparations so made will keep for a good many hours, particularly if the room is cool. You may think that I am somewhat fastidious about this apparently very simple matter of the preparation of the slides. But, for your warning, I would repeat that it is entirely on account of ignorance, or the non-employment of this very simple technique, that the discovery of the malarial parasite was so long delayed, and that so many people are still sceptical as to its existence. If you do not attend to this little matter you had better not waste your time in searching for the plasmodium, for you certainly will never find it. Your microscope must be provided with a good condenser and two objectives mounted on a nose-piece. Daylight is better than artificial light : either will do. The lower objective should magnify about 300 or 400 diameters, the higher at least 600 diameters, but better still 1000 or over. Having selected your slide, begin to search it bit by bit with your lower power ; do not grudge the time spent over it. You may chance on a parasite in the first field or you may have to search for half an hour before you come across one, and you may have to try a second or even a third slide. Sometimes they are numerous enough—one, or perhaps two, in every field ; at other times they are very thinly sown. It is not so simple and easy a matter as searching for tubercle bacilli ; rarely are they seen at once and in every field. If you are not prepared to spend at least half an hour in the search you had better not attempt it. Sooner or later, if patient, you will be rewarded—that is, if the blood-giver is suffering from malarial disease and has not been drugged with quinine. How is the parasite to be recognised ? Searching with the lower power you at last perceive, either in a blood-corpuscle or in the plasma of the blood, a minute speck of pigment of an intensely black, or sometimes a very dark brown, colour. Centre any such object you come across and turn on the higher power. You will then see, after a little careful scrutiny, that the black pigment is inside a clear, transparent, homogeneous substance, which, in its turn may itself be either inside a blood-cell—in which case it has a more or less irregular shape, which I shall attempt to describe presently—or this body is free in the plasma. In another form the piquant is concentrated and heaped up at the centre of a pale circular disc, or, perhaps, long sausage-shaped rod, which may be either straight or more or less bent into the form of a sickle or crescent. You may see that the pigment is diffused through a clear body as granules—stationary or in active movement—and inside a sphere much smaller, or quite as large as, a blood-corpuscle. There are other forms, but those I mention are the principal and most frequently met with. Examples of these I have placed under the various microscopes on the tables.

I shall now try to describe these bodies in some detail and afterwards endeavour to indicate their relationship to each other ; for they are really, all of them, though seemingly very different, but phases of one polymorphic organism.

Under microscope No. 1, at the centre of the field, you will see a red blood-corpuscle, with a palish, shadowy sort of body, occupying a considerable portion of the interior. Here and there, included in this body, you will see particles of a very dark pigment. The part of the corpuscle which is not occupied by this pale, pigmented body is quite normal in appearance and of the ordinary colour. Direct your attention for a time to the particles of dark pigment, and carefully watch them. You will see that they gradually change their position relatively to each other, and also to the rest of the contents of the corpuscle. Now fix your attention on the ill-defined edges of the pale body. You will see that they, too, slowly alter their form. It is evident, therefore, that the body inside the red blood-corpuscle is moving ; in fact, that it is alive. This phase of the malarial

Fig. 1.

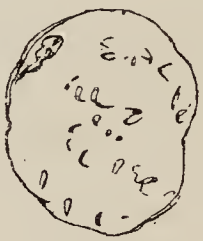


Fig. 2.

parasite is called the "intracorpuscular, pigmented, amœboid form," and is the one most frequently encountered. Under microscope No. 2 you will see a body similar to that just described ; but in this instance it is not occupying a blood-corpuscle ; it is free in the plasma. It, too, is pigmented and is indulging in slow amœboid movement. This is one of several forms of free pigmented amœboid bodies seen in malarial blood. You will remark that in both the free and the intra-corpuscular bodies the pigment particles are irregularly diffused through the substance of the parasites. Under microscope No. 3 you will see a disc-shaped body, beautifully circular, and everywhere transparent except at its centre, where there is an accumulation or heaping up of intensely black pigmented granules, the particles of which are occasionally agitated by a kind of Brownian movement. Sometimes these bodies, like the first form I have just described, are intra-corpuscular, in which case a fine ring of hæmoglobin is seen to surround the periphery. Usually they are free in the plasma. These I shall call "centrally-pigmented

discs." Under microscope No. 4 you will see a body exactly similar to the last—pale, circular, disc-shaped—and also with a cluster of black pigment granules at its centre. Focus it very carefully and you will perceive that the pale peripheral substance is arranged in minute leaf-like segments, each segment alike in size and shape, and the whole resembling a daisy or single dahlia. In some of these segmented bodies a minute speck of pigment can be seen in the centre of each petal. This is not

Fig. 3.

very common ; I have seen it, however, and it contributes very much to the striking appearance of this little blood-flower. The well-defined pigmented common centre represents the heart of the daisy. Altogether these "rosettes," as they are called, are very beautiful and striking objects, and cannot be confounded for a moment with any normal constituent of blood or regarded in any way, as some have done the other forms I described, as degenerated blood-cells. Under microscope No. 5 you will see

Fig. 4.

a sickle-shaped body, for the most part pale, like the discs, except at its centre, where it too has a well-marked accumulation of black pigment. These bodies are called crescents, but they are not crescents in the usually accepted meaning of that word. The horns are rounded off, not sharp like the horns of the crescent moon. You will also perceive in many specimens a delicate arc-like line, crossing the cup of the crescent, with its convexity directed away from the crescent and joining the two

extremities or horns. The general appearance of such bodies reminds one of what is known as the "new moon with the old moon in its arms." You understand what I mean—a clear, well-defined crescent with a sharp-edged, but still shadowy, ill-defined, slightly luminous body included. Under microscope No. 6 you will see a small, sharply-defined, exceedingly transparent, spherical body containing innumerable points of black pigment dancing about in its interior. This is one of several varieties of the free malarial bodies we sometimes encounter, and is, I believe the remains of the most striking of all the phases of the malarial parasite. This striking form I allude to I am sorry I am unable to demonstrate to you at present. It is of extreme delicacy and does not retain its peculiar features for more than an hour or two after removal from the body, so that had I been fortunate enough to come across one when preparing these slides this forenoon it would probably have vanished by this time. You must take my word, therefore, for the reality

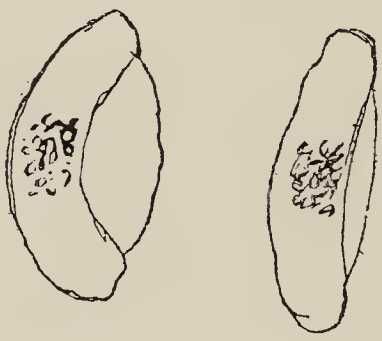


Fig. 5.

of its existence and my description for the thing itself. Sometimes, in searching through a slide of malarial blood, at a particular point of the field you will see one or more of the blood-corpuscles moving about a little and agitated without any evident cause. If one of the corpuscles happens to be standing on edge, you may see it bend over on itself, as if pressed down by some force, and then suddenly spring up again as if this force had been removed. Sometimes in such a slide you will see one or more of the corpuscles crushed up, as it were, or dashed aside and tumbled about. If, now, you turn on the high power and inquire as to the cause of this disturbance among the corpuscles, you will be brought face to face with one of the most striking of the many strange sights the microscope reveals to us. Imagine a microscopic cuttle-fish or octopus with a clear, globular body in which a number of rather large black pigment particles are tumbling and chasing each other about in a state of incessant but irregular motion. Imagine, also, proceeding from and attached to this body, one, two, three, or four

long slender arms, each of them three or four times the length of the diameter of a blood-corpuscle ; and all these long, cuttle-fish-like arms whirling about like so many whiplashes or flails in a state of frantic activity. This is what is known as the "flagellated organism" of malarial blood. The long arms thrust the corpuscles about, double them up, coil around them, squeeze them out of shape, and treat them like so many india-rubber balls. Occasionally one of the arms break away from the spherical body it was attached to ; it swims about, wriggling its way among the corpuscles, and quickly passes out of the field. Sometimes one of the arms coils itself up or starts into an extended position, shivering like a wand when it is struck. I have watched these bodies thus disport themselves, if I may use the expression, for an hour at a time ; and I believe, under favourable circumstances, they sometimes remain alive on the

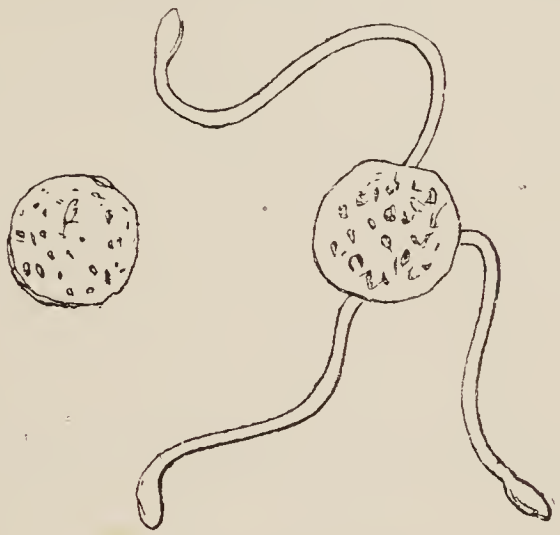


Fig. 6.

slide for two or three hours even before they finally cease to move. When movement ceases the flagellæ slowly melt away, leaving the central sphere with its dancing pigment particles still in active motion. Anyone who has seen these flagellated bodies can never mistake them for degenerated blood-cells or regard them as anything but parasitic. Yet another appearance I would direct your attention to. Under microscope No. 7 you will perceive a large leucocyte. You will readily recognise it by its irregular shape, the peculiar appearance of its protoplasm, and by its ill-defined nucleus. You will see that it has enclosed in its substance a mass of black pigment resembling that constituting the centre of the disc-shaped organism, the rosette body, and the crescent.

These are the principal forms assumed in the human blood by the malarial parasite.—*The Lancet, January* 6, 1894, *p.* 6.

11.—SCURVY IN CHILDREN.

By G. A. Sutherland, M.D., M.R.C.P., Physician to the North London Hospital for Diseases of the Chest.

In the latter half of the present century the attention of German workers was directed to an anomalous affection, to which in default of a better name and a more correct pathology they applied the term "acute rickets." The subject did not attract any attention in this country until in 1878 Dr. W. B. Cheadle published in the *Lancet* a paper on "Three cases of Scurvy supervening on Rickets in Young Children." The clinical side of the question was further developed by Dr. Cheadle in subsequent papers, and finally in 1883 Dr. Thos. Barlow contributed an account of several *post-mortem* examinations he had made in fatal cases, and proved conclusively that the cases described as "acute rickets" were in reality a combination of rickets and scurvy, "the scurvy being an essential, and the rickets a variable element."

Scurvy in children is essentially a food disorder, being always associated with a deficient supply of sound, fresh animal or vegetable products, and in many cases with the employment of a diet quite unsuited to an infant's digestive powers, and therefore comparatively useless as nourishment. There is no doubt that the increase of scurvy amongst children during the past fifteen years has been largely due to the substitution of proprietary infants' foods, preserved, condensed, and artificially prepared, for cow's or breast milk and natural vegetable products.

An important question presents itself as to whether scurvy in infants ever arises when the only diet employed is breast milk or cow's milk. As regards the former I have never met with a case, or seen one described, and it probably does not occur unless the nursing mother is herself the subject of scurvy at the time. A history of improper feeding is so universally present in the recorded cases of scurvy that it may be taken for granted that the disease will not arise if a sufficient quantity of fresh cow's milk is administered.

In the treatment of infantile scurvy, both Dr. Cheadle and Dr. Barlow recommend the use of meat-juice, and regard it as a powerful anti-scorbutic. In his remarks on a series of cases of scurvy, Dr. Barlow says: "It is very important to ascertain whether the affection ever appears whilst a child is taking raw meat-juice. It is clear that the use of beef-tea was not adequate to prevent the appearance of the disease, for in three cases, perhaps four, this food was being given at the time of onset."

The overwhelming proportion of cases occurring during the first two years of life is very striking. The period of life between the seventh and twenty-fourth months supplies by far the greatest number of cases. As this is also the period during which artificial and preserved infants' food are chiefly used, the circumstance is not surprising.

Signs and Symptoms.—Scurvy is a chronic disease, in which the premonitory symptoms usually pass unrecognised. It is further associated in most cases in children with rickets, the signs of which are more evident, and consequently the scorbutic manifestations are overlooked until an attack of hemorrhage, or excessive tenderness in the limbs, excites suspicion. At the onset a gradually increasing listlessness with debility comes over the child; instead of running about actively, he will prefer to sit still or to lie down, or, if an infant, the patient will show none of the excessive activity in the limbs which is characteristic of the period of life. As the disease advances, the signs of anæmia increase; the child becomes short of breath on exertion, and the complexion assumes a yellowish hue, with pallor of the lips and conjunctivæ, and of the skin surfaces. The listlessness increases to complete apathy, the patient taking no notice of what is going on around, refusing to join in the play of other children, and being fretful and irritable if disturbed. This is the condition known as "scorbutic cachexia," and from it alone the disease can often be easily recognised. Finally, and it may be suddenly, there comes complete loss of power in one or more limbs: the child screams if he is moved or touched, and may lie moaning even when undisturbed; and the fear of being touched may be so excessive that he cries out when anyone approaches him. This last symptom points to an amount of suffering to which there are few parallels in childhood. Following on, or accompanying the above, are symptoms which are best considered in relation to the regions they affect.

(1) *The Gums.*—In the early stages of scurvy, the gums are characterised by a pallor which is due to anæmia. Later, swelling and redness come on at the edge of the teeth, which increase until there may be large protuberant masses of gum-tissue, purplish in colour, and entirely concealing the teeth. The swollen tissue is apt to ulcerate and break down, and more or less severe hemorrhage may take place. These are the conditions when the gum symptoms are marked, and they correspond with the descriptions of writers on adult scurvy. In many cases, however, in children, the gum symptoms are slight or entirely absent. In infants who have not cut any teeth there is not found any swelling of the gums; the usual morbid change, if any is present, being a few minute hemorrhagic spots in the deeper layers of the mucous membrane.

(2) *The Bones.*—Loss of power and tenderness in the lower limbs is a marked symptom of scorbutic disease in children, and in the case of infants it is the most marked and the most frequent local symptom. This condition is caused by hemorrhagic effusion under the periosteum of the long bones. The thigh is most commonly and most early affected. It will be observed that the child cries out when the limb is moved, and that a swelling has developed rather suddenly over one or other extremity of the femur. This will increase, and the child, by its shrill piercing screams, will indicate clearly that great pain is present. The skin of the thigh is tense and glistening, but does not usually pit on pressure, nor is it inflamed. The extreme pain is due to the tension of the separated periosteum. In more advanced cases separation of the epiphysis takes place, and crepitus can be elicited between the shaft and the epiphysis. Fracture of the shaft of the bone is not uncommon, especially if it is roughly handled, or if the child is using the limb. The swelling is usually present on both sides, but may be greater on one side than the other. The long bones of the legs, and of the upper extremities, may be similarly affected, and more rarely hemorrhagic effusion takes place in connection with the skull, the iliac bones, or the scapulæ. As regards the ribs, they may become separated from the cartilages in front, causing a distinct recession of the sternum, most marked on inspiration (Gee).

Dr. Barlow has laid stress on the presence of periosteal effusion, along with the absence of gum symptoms, as being characteristic of scurvy in children under two years of age. After that period he considers that periosteal effusion is less frequent, and that sponginess of the gums becomes a more prominent feature, as it is in cases occurring amongst adults.

As regards the periosteal changes, it must be noted that in rickets there is an enlargement at the junction of the epiphysis and shaft in the long bones, along with an overgrowth of tissue under the periosteum. These conditions point to an excessive vascular supply around the bone, and if in addition a blood dyscrasia such as scurvy is present, it seems natural to expect that hemorrhage will occur around the epiphysis and under the periosteum. These are the situations in which the scorbutic hemorrhages of infants are most marked. Both in Dr. Barlow's cases of scurvy and in my own, I have found that the subperiosteal hemorrhage is most marked in those patients in whom rachitic disease is most acute. The fact also, pointed out by him, that after two years of age the periosteal affection tends to recede into the background, coincides with the natural cessation of active rachitic changes at the same period of life.

(3) *The Eyes.*—A common sign of scurvy, and one of considerable diagnostic importance, is œdema of the eyelids. This

may be present in one or both eyes, and affects chiefly the upper eyelid. In more severe cases the eyes will be completely closed, owing to the amount of swelling present, a condition usually accompanied by actual hemorrhage, so that the eyelid is at first red, then black, and then yellow, as the effused blood undergoes absorption. Bleeding may also take place under the conjunctiva, which then becomes swollen. Proptosis has been noted by some writers, and this depends, according to Dr. Barlow, on a bone lesion, namely, "extravasation of blood between the orbital plate of the frontal and its subjacent periosteum, this extravasation tending to push down the eyeball." Dr. Holmes Spicer has recorded three cases of scurvy in infants, in which the leading sign was proptosis with œdema of the upper eyelids, and he agrees with Dr. Barlow in regarding the condition as due to sub-periosteal hemorrhage. Dr. Spicer has noted that the immediate cause is frequently a violent fit of crying. Both eyes may be found displaced downwards and forwards, or one eye only may be affected at first, and the other subsequently. In some cases a slight sub-periosteal hemorrhage may be detected from a line of blood-staining along the orbital margin. The absorption of the effused blood under proper treatment proceeds rapidly at first, but a certain amount of thickening with displacement of the eye may persist for months. When the hemorrhage is recent, pressure on the eyeball causes acute pain, just as in the case of sub-periosteal effusions elsewhere.

(4) *The Urine.*—Dr. Gee and Dr. J. Thomson have recorded cases in which hemorrhage from the kidneys was the only sign of scurvy in infants. Such cases are rare, but blood is frequently present in the urine in this disease, although as a rule it is not excessive in amount. Albuminuria is not uncommon, but casts are not usually present, or are few in number.

(5) *The Skin and Subcutaneous Tissues.*—The skin is frequently dry and harsh. Œdema is a common and often an early sign. I have already referred to its occurrence in the eyelids, and it may be present also around the ankles and on the dorsum of the foot. In more severe cases the hands are affected, and the œdema may extend up the limbs.

Subcutaneous hemorrhages are frequently met with in scurvy, as in all forms of anæmia, and while they may be extremely minute in some cases, the more characteristic forms are of larger size having a bruise-like appearance, or even causing large extravasations which can be felt. The occurrence of these under the scalp is of considerable diagnostic importance in scurvy. A trifling injury will often produce a considerable effusion of blood into the subcutaneous tissues.

Ulceration of the skin has been noted in several cases. This usually commences as a bleb, which becomes hemorrhagic,

bursts, and leaves an ulcerated surface. The ulcer tends to become deeper and broader. It is not painful, but presents a dirty sloughing surface and bleeds readily. The ulcers may occur spontaneously, or may follow an injury.

(6) *The Muscles.*—Muscular weakness and so-called "rheumatic pains" are frequently complained of by the subjects of scurvy. The cause is extravasation of blood or serum between and into the muscles. The limbs are usually kept flexed so as to relieve as much as possible the tension caused by these effusions. In more chronic cases a condition of contraction is established, so that the knee may become firmly flexed, or the foot may assume the position of *pes equinus.*

Treatment.—The preventive treatment of scurvy consists in the employment of a proper diet, and, as already stated, breast milk in the case of infants is the best and safest food. For a child in good health, cow's milk fresh and sound in quality and sufficient in quantity is a complete diet up to the age of nine months. If the infant does not tolerate milk well, and undigested particles are passed in the motions, it may be necessary to alter the diet, but any such alteration should be temporary. In all rachitic cases, and in children with feeble digestive powers, I am in the habit of ordering a teaspoonful of the juice of oranges, lemons, or grapes twice a day with the food. I have never found scurvy arise when this treatment was carried out, and I believe it is sufficient to prevent the occurrence of the disease. In the case of children over one year, if they are fed on wholesome fresh food, with a proper proportion of fruit, potatoes, and other vegetables, scurvy will not be developed.

As regards the curative treatment, the diet must be regulated in accordance with the age of the child. In the case of infants, fresh cow's milk is to be ordered, suitably diluted with water or barley-water. I do not believe that much reliance is to be placed on meat-juice or beef-tea as antiscorbutics; but these are useful in the treatment of scurvy when digestive troubles are present and milk is not well tolerated. It is of the first importance to improve the patient's general health as quickly as possible, and for this purpose the temporary use of meat-juice may prove beneficial. On the other hand, all the varieties of preserved milk are to be absolutely forbidden, along with the different proprietary infants' foods. My object here is not to discuss the value of these preparations in the diet of healthy infants, but to point out that in scurvy they are distinctly injurious. In the case of older children, a more liberal diet is allowed, attention being paid to the condition of the digestive system, but no salted or preserved foods of any kind are to be given.

The more special part of the treatment in all cases consists in the free administration of fruits and vegetables. The full list of these is a large one, but the following will be found the most useful, namely, oranges, lemons, grapes, potatoes, and cabbages. The juice of the fruit may be expressed and added to the milk in the case of infants. Potatoes and other vegetables may be conveniently administered in soup made from meat stock. It will often be noticed how voraciously scorbutic patients devour fruit and vegetables, and therefore care must be taken that the amount supplied is not in excess of the digestive powers, in which case diarrhœa, &c., may follow and interfere with the recovery.

As regards medicines, most of them are of no special value in the treatment of acute manifestations, and some are distinctly injurious. I refer more particularly to mercury, which has frequently been employed, owing to the disease having been mistaken for syphilis. As a rule the acute symptoms will be increased during the administration of this drug, while the general debility and cachexia may rapidly progress to a fatal termination. If the case is at all doubtful, and if mercury is being employed, it ought to be used as a means of diagnosis, and the treatment should only be so far prolonged as to give time to test whether improvement takes place under its use. In the convalescent stage cod-liver oil is of great service in restoring the general health.

The local treatment in scurvy is unimportant because, under proper diet, all manifestations clear up rapidly. If the gums are ulcerated and bleeding, they may be painted with a solution of glycerine of tannic acid, and a mouth-wash of "Sanitas" lotion may be ordered. When the limbs are swollen and tender, support and rest by means of sand-bags, and the application of cold compresses, will give relief. Mr. Herbert W. Page has operated in one case, that of an infant aged nine months. He cut down on the femur and tibia, found them entirely denuded of periosteum along the shafts, and turned out masses of blood-clot which surrounded the bare bone. The wounds showed no undue tendency to bleed, and the child made a good recovery. There is, however, no pressing call for surgical interference in such cases, for under antiscorbutic diet the hemorrhages cease and the effused blood is rapidly absorbed.

The general hygienic treatment must be attended to. Sunlight and fresh air are of great value. It must be remembered, at the same time, that fatal cardiac syncope sometimes occurs, and therefore rest in bed ought to be maintained until the patient is free from pain and breathlessness, and has been under antiscorbutic diet, as described above, for some time.—*The Practitioner, February*, 1894, *p.* 82.

12.—A CASE OF SPORADIC CRETINISM TREATED BY THYROID EXTRACT.

By John B. Hellier, M.D., &c.

The following case is published to show the benefit which may be obtained by feeding a cretinous child with thyroid extract.

Fig. 1.—Before treatment.

The patient first came under my care in February, 1892, when she was two years and four months old. She then showed

symptoms of rickets combined with sporadic cretinism. She had no teeth ; the fontanelles were open ; the ribs were beaded, the epiphyses swollen, and the tibiæ and fibulæ were curved. The eyelids and cheeks were swollen and puffy, the lips were prominent, and the tongue was too large. Subcutaneous myxœdematous swellings, of harder or softer consistence, were

Fig. 2.—After three months' treatment.

found under the chin, over the posterior triangles of the neck, on each side of the lumbar spine, over the back of the upper

arms on both sides, and over the origin of the flexor and extensor muscles of the wrists and hands. The hands were swollen, and the ball of the thumb on both sides was thickened by marked swelling. The legs and feet were also irregularly swollen, the swellings being specially marked upon the front of the two thighs. There was no pitting anywhere. The child had umbilical hernia and a greatly distended abdomen, but the liver and spleen were not enlarged. The skin was harsh and rough, the hair being coarse. The complexion was sallow and pale, with a dusky tinge on the forehead and temples. There was convergent strabismus, and nystagmus was frequently observed. The extremities were habitually cold and bluish. The face had a vacant expression. The child took little notice of anything. She cried almost constantly, and could not stand, sit, or crawl, or speak a single word. The mother said that she herself and her husband were healthy, and that she had a younger child four months old, who also was healthy. The patient was suckled for thirteen months. She had had bronchitis often, but no diarrhœa or convulsions. Her present condition had developed gradually. The tongue was always large. The nystagmus was seen first at the age of sixteen months. The subcutaneous swellings had developed more recently. Figure 1, taken from a photograph of the child, shows very well the characteristic expression of the face and the irregular "lumpiness" of the back, neck, and limbs. In March, 1892, the child was shown at the Leeds and West Riding Medico-Chirurgical Society as a typical case of sporadic cretinism. I had the patient under observation for a year, and gave her simple treatment by cod-liver oil, iron, arsenic, &c. At the end of this period her condition was substantially unaltered. She had four incisor teeth, and was, perhaps, slightly more intelligent, and could just articulate "da, da" imperfectly, but was in other points as marked an example of cretinism as ever. On Feb. 3rd she was ordered to take by the mouth three days a week half a drachm of thyroid extract. On Feb. 17th the dose was altered to fifteen minims every week-day. At the end of a month I was able to make this note: "March 3rd: The whole aspect of the child is changed; she looks sharper and brighter, and her eyelids and cheeks are less swollen. The lips are thinner, the tongue smaller, and all the myxœdematous swellings throughout the body are smaller. The hands and feet are warmer. She eats better and tries to talk." On March 17th it was noted that she perspired a good deal, a thing which had never happened before the present treatment. The swellings were much less. On the 24th the hair was coming off the occiput. She had cut another incisor and one premolar. The skin was much healthier in colour. On April 7th it was clear that the abdomen was much

smaller, and the umbilical hernia was disappearing. On the 14th the mother reported that the child had begun to sleep with the mouth shut. On the 21st fresh hair was growing on the occiput, and on the 28th she had nine teeth and was gaining in weight. On May 4th there was no abnormal swelling or thickening to be observed, and the thyroid extract was discontinued for the time being. The child was photographed at this date. Fig. 2, which was taken from the photograph, does not show the limbs well, owing to the restlessness of the child at the time, but the change in general aspect and expression is unmistakable. No feverish reaction was noticed during the thyroid feeding, but as the child was treated as an out-patient the information is not reliable on this point. The improvement in the patient began almost at once, and struck everyone who had seen her previously. On June 23rd her condition was as follows: The fontanelles were nearly closed, the rickety condition was less marked, there was no hernia, the abdomen was less in size, and the nystagmus was only rarely noticed. The patient had twelve teeth, she was stronger, could sit but not stand, and can only say one word; she cried less and was sharper and brighter and more intelligent. There was no myxœdematous swelling to be observed.—*The Lancet, November* 4, 1893, *p.* 1117.

13.—ON THE CHANGES IN THE THYROID GLAND IN GRAVES'S DISEASE.

By W. S. Greenfield, M.D., F.R.C.P., Professor of General Pathology in the University of Edinburgh.

[In the Bradshaw Lecture for 1893, Professor Greenfield marshals the facts which bear upon the question of the thyroid origin of Graves's disease under the following heads:]

1. The examination of the thyroid, which, so far as I have been able to obtain material, reveals in nearly all cases a peculiar form of proliferation of the gland tissue, unlike that seen in other goîtres, and resembling a proliferation for the performance of increased function.

2. The relief afforded by removal, partial or entire, of the glands.

3. The presence in the nervous system of changes, slight in degree, but widespread, especially affecting those centres or nerves which we should suspect from the symptoms to be involved. The fact that these alterations are of a like nature to those seen in toxic diseases, for example, hydrophobia and tetanus, suggesting that they also may be of toxic origin.

4. The contrast, in many of the leading conditions, of myxœdema and Graves's disease, these including both symptoms and anatomical changes.

5. The correspondence, in some important respects, of the phenomena of Graves's disease with those produced by artificial introduction of thyroid secretion. (We reproduce here the more important facts of the lecturer's observations upon the changes in the thyroid gland, based upon six fatal cases of Graves's disease).

Of all the remarkable facts in connection with the history of this disease, the most striking is the apparent neglect of the direct study of the changes in its structure of the thyroid gland itself.

Most writers, if they refer to the gland at all, adhere to the view that the enlargement is consequent on and associated with active hyperæmia and vascular dilatation. Thus Ziegler, in his textbook on "Path. Anat.," 6th edition, p. 723, speaks of the chronic enlargement of the thyroid, "which occurs as a symptom of that peculiar neurosis of the vessels described as Basedow's disease," as a condition due to congestive hyperæmia; and he adds that it is in accordance with the view that the excessive blood supply is the cause of the overgrowth, that there is an abundant vascularisation found in the growing gland tissue.

Taken in a certain sense, but not in that evidently intended, it is no doubt true that a proliferation of blood vessels does occur, as in all active hyperplasia of glands, as also of other parts. But so far from this vascularity being excessive, it has not been specially prominent in any case I have seen. In one case there was very slight vascularity towards the surface of the lower lobe. The enlarged gland, which may be many times its normal bulk, is, on section, of pale pinkish colour, and so closely resembles in appearance a salivary gland, that a portion may readily be mistaken for one. A few cysts, usually minute, may be present, containing usually a clear serous fluid, but they may be absent entirely, and are relatively less frequent than in mammary or other glandular tumours. Most of the substance is comparatively solid but elastic, and of far less consistence than the normal gland.

In shape the enlargement in typical cases differs from most others from the fact of the gland being usually more uniform, its varieties partly depending on the normal marked variations in shape of the gland. I do not assert that this need always be so, for the degree of change usually varies in different parts. Microscopic examination shows that the enlargement is due to an enormous hyperplasia of the secreting structure. It bears to the normal gland the same relation which the mammary gland in lactation bears to that in quiescence. In no other way can

we account for its condition, or find any analogue than by such a comparison, for whilst, as in all such hyperplasias, we may find, especially in ductless glands or glandular tumours, some tendency to cyst formation, this must occur from the physical condition.

The more striking changes in the thyroid are two; closely allied in nature and usually existing in an especially marked manner in different parts of the same gland.

That which appears to be the earliest is an alteration in the character of the epithelium lining the spaces from a cubical to a columnar type. This change is associated with greatly increased proliferation, similar to that seen in adenomas, so that papillary projections into the spaces are common. In this condition, the resemblance to a cystadenoma of the ovary is striking. In addition there appears to be active secretion, and absorption of the colloid material, which is replaced by a more mucinous fluid. Desquamation of the altered epithelium is also common, the masses of columnar cells lying free in the space, which may be dilated. It is observed that the glandular character and arrangement is not lost.

With this, there may often be seen elongated duct-like spaces, which suggest the idea that there are ducts in the gland.

The second change is the production of an enormous number of newly-formed tubular spaces, lined by a single layer of cubical epithelium. In their structure, and the regular arrangement of their epithelium, they exactly correspond to the tubules of a secreting gland, for example, the sweat glands.

Both of these changes exactly correspond to such as may be seen in a gland in active evolution, and, if we except the development of an adenoma, have no other pathological equivalent.

Associated with these changes we usually find no increase in vascularity but rather a diminution, although there can be little doubt that the proliferation of the tubules is associated with a corresponding evolution of capillaries.

A comparison of these changes with those found in the development of adenomatous growths in the thyroid reveals striking differences.

The change is a general one, not localised, and spreading in a tumour-like manner. Moreover, the regular mode of evolution, and the absence of the irregular growth, and filling of the tubes with cells of irregular size and shape, is distinctive. I do not say that some adenomas of the thyroid may not show a similar structure, but I have been unable to find them in the cases I have examined.

As a sequel of these proliferative changes we may find catarrh. This is sometimes prominent in advanced cases. The

epithelium desquamates, undergoes cloudy swelling, and here and there may fill the tubules. This is especially seen where death has occurred with high temperature.

From the study of cases of long duration, it appears that this proliferative change is liable to be followed by fibrous overgrowth. At first there is little sign of this. The fibrous septa, which are little prominent in normal conditions, may show some thickening at a comparatively early date. But within the lobules no such change is seen. In advanced cases the fibrous overgrowth, starting from the septa, invades the glandular structure, and in parts completely obliterates it. The lining epithelium undergoes atrophic changes similar to those seen in all interstitial overgrowth in glands. It becomes small, separates from the subjacent tissues, and then disappears entirely.

Two points deserve mention. In the normal structure of the thyroid we find a number of undeveloped grandular spaces, often in clustered masses. This suggests that normally there exists, as has been shown to be the case in other glands, a reserve of secreting tissue capable of development in accordance with physiological needs, and probably always used up during the course of life. The absence of increased vascularity, in fact, the apparent diminution in the vessels, is a point of great practical importance. For there is no doubt that the idea that the thyroid was especially vascular in Graves's disease has been one great deterrent to the surgeon against operation. The cause of the apparent vascularity I shall discuss later.

In conclusion, I would suggest that since the change in the thyroid in typical cases of Graves's disease corresponds so closely with that seen in glands undergoing evolution for increased function, it must have some profound effect both on the quantity and quality of the secretion.

Now it is true that we could not from the study of this condition alone, determine the effect on function. If we regarded the change as catarrhal, we should anticipate alteration in the secretion, perhaps with excess in quantity, almost certainly with defect in quality. But a study of other conditions of its enlargement, the contrast afforded by the reversed condition in myxœdema, and comparison with other glandular enlargements convinced me that this could not be the essential condition. In a series of cases, not of Graves's disease, which I have had opportunities of observing marked enlargement of the gland has occurred during pregnancy, subsiding either during lactation or later. And in one or two cases the presence of enlargement in persons with an unusually large thyroid has been noticed to concur with increased rapidity of pulse and a slightly elevated temperature, only, however,

from one to two-fifths of a degree, but persistent. And here I may note that such minor degrees of enlargement and variations in size are by no means infrequent in women, and deserve careful study.

I would especially emphasise the point that it is not the mere size of the gland which is of importance, but its structural alterations. For it is quite possible that hyperplasia of the kind I have described, a great alteration in the amount of secreting tissue and greatly exaggerated function may be present without notable increase in volume. It may well be that it is in those cases in which catarrhal and cystic changes are least prominent the activity of secretion is greater than where the derangement of proportion in size is greater. The intensity of the symptoms certainly bears no proportion to the actual size of the gland, some of the severest cases being where it is only moderate in degree.

Vascularity of the Thyroid.—It has been alleged by some that the enlargement of the thyroid is caused by excessive hyperæmia, and also that in Graves's disease it is always highly vascular. If the thyroid enlargement is due to excessive vascularity, how comes it that no similar enlargement, that is, with proliferation, occurs in other adjacent parts or from experimental hyperæmia? The concentration of the hyperæmia should surely suggest that if it exists there must be some special relation between the gland and the vasomotor changes. Whatever hyperæmia may exist, in so far as it is not such as is seen in the mammary gland during lactation, it shares with other parts, and neither in physiology nor pathology do we find that hyperæmia alone affords any parallel in the production of such changes.

Apparent Increase in Vascularity of the Thyroid.—It appears to be commonly accepted that the thyroid actually pulsates in Graves's disease. I have carefully examined many cases, and have failed to find any sufficient evidence of this.

The pulsation is far more marked over the arteries than elsewhere. A thrill may often be detected over the superior thyroid artery when it cannot be found elsewhere, and a general thrill I have never seen. The apparent thrill appears to me to be due to the relaxation and enlargement of the arteries. It has been shown that the arteries actually enlarge, and may undergo irregular dilatation. But this enlargement of nutrient arteries is also seen in all active hyperplasias. For examples, the mammary and uterine arteries may be cited.

Added to this, we have the pressure both on arteries and veins which must undoubtedly occur. The carotid and its branches must be compressed and stretched, and communicate their pulsation in an abnormal degree. The internal jugular

and the plexus of veins over the thyroid must also be compressed. Indeed, it has been suggested that by its pressure on the jugular the thyroid controls the vascularity of the brain, an hypothesis in which I do not concur. But, if the pulsation is only in the vessels, why does not the same phenomenon occur in ordinary goître? The explanation seems to lie in the relaxed condition of the arteries, which may produce a murmur in the other great vessels, heard over the sternum; and also in the fact that the veins are engorged, not from pressure alone, but from the active changes in the thyroid, just as the mammary veins are engorged during lactation. Except in cases in which, through cardiac valvular disease, or dilatation, venous pulsation existed in all the visible veins in the lower part of the neck, I have never been able to detect any pulsation which could not be accounted for by these causes.

Amongst the objections to the view that the change in the thyroid has any special causal relation to Graves's disease, is that myxœdema has been stated either to co-exist with, or to follow the former. The fact that it is apparently infrequent, and that rapid subsidence of the enlargement may occur, are additional arguments in favour of the view that the hyperplasia is rather functional than inflammatory, that is, that it is governed by the laws regulating evolution for increased functional activity.

But I must add that I have rarely seen complete subsidence without any induration. Nor can I concur in the view that the enlargement usually or even commonly occurs in the course of Graves's disease, the thyroid being previously healthy. My own experience suggests that some enlargement commonly precedes, it may be for some years, the more rapid enlargement, and greatly exaggerated function, which may be called into existence by some sudden exciting cause.

Some writers confidently allege that Graves's disease may exist without enlargement of or marked structural change in the thyroid. As regards the alleged co-existence of myxœdema and Graves's disease, it would be especially interesting to know whether the Graves's disease was first in order of occurrence. I have not been able to examine the records of alleged cases. But the fact that in some long-standing cases of Graves's disease we may find so extensive fibrous and atrophic changes raises the question whether increase of activity in the functions of the gland, if the cause of the disease, must necessarily persist, or whether persistent changes in the nutrition and structure of the nerve centres, due to prolonged irritation, may not keep up some of the symptoms; if so, there would be nothing contradictory in the persistence of these together with the phenomena of myxœdema.—*British Medical Journal, December* 9, 1893, *p.* 1261.

DISEASES OF THE NERVOUS SYSTEM.

14.—ON HYSTERICAL TREMOR.

By James H. Lloyd, M.D., Physician to the Philadelphia Hospital.

Hysterical tremor may be partial or general. It may be limited to one arm ; or it may be of the hemiplegic or paraplegic type ; or it may be general, involving even the trunk and neck muscles. When hemiplegic it has been transferred, in some cases, from one side to the other, under the influence of magnets and other hypnotic agents. When paraplegic, it resembles closely the so-called "spinal epilepsy" of Brown-Séquard, especially if accompanied with contractures.

The duration varies. Some cases persist for months, even years ; sometimes the tremor comes in accesses after convulsions, lasting then for some moments, hours or days. It should always be looked for at such times ; as it is not apt to be by most practitioners, who dismiss hysteria, when they recognise it, with contempt. Its very long duration is attested by more than one observer. Gilles de la Tourette places it among the permanent stigmata of hysteria—an important decision, because this permanence, more than any other feature, causes it to resemble organic disease. His position is confirmed by the undoubted tendency of tremor to recurrence. In my case it existed in a most aggravated form for many months.

The intensity varies. Sometimes it is very slight ; but, again, it may be so great as to interfere with walking, with writing, with the patient feeding him or herself, and, in fact, with almost every voluntary motion. Commonly, the tremor is increased by voluntary motion ; but it may persist during repose.

These tremors have a rhythm ; but the rapidity and extent of the oscillations vary in different cases. Hence they are polymorphous, and, as the French insist, admit of classification. My own original observation rather confirms these teachings, to the extent at least that in this one case the rhythm was constant, *i.e.*, always presented a definite "type." I have been led, however, by studying the very few papers extant to think that all cases do not present this constancy of type ; that some cases, in fact, vary in type, *i.e.*, in the frequency and excursion of the rhythm.

Mitchell says of hysterical tremor, that it may begin as fine in rhythm, and increase under excitement, or the sense of being watched, into a coarser, wider rhythm. Perret makes a similar observation on his case : during repose the tremor resembled that

of alcoholism or Basedow's disease, but its amplitude was much increased on voluntary motion. If persistency of type is always found in the same patient it adds to the difficulty of diagnosis, whereas variation of type in the same patient would be more in accord with the protean nature of the disease, and would make it easier of recognition.

Several schemes of classification have been proposed. Rendu made two divisions: first, those tremors simulating insular sclerosis; and, second, those simulating paralysis agitans.

The variety usually recognised as the "type Rendu" is probably the most common, and the most important from the clinical standpoint. In it the tremor may, or may not, persist during repose, but it is exaggerated or provoked by intentional movements, the vibrations not being increased in frequency but only in amplitude. This type was presented by my own case, as well as by a number of those reported by others. In my patient the movements became irregular in the legs, as shown by the tracings, but this irregularity, caused by jerking movements, must not be confounded with tremor, which has the same rhythm in the foot as in the hand.

Diagnosis.—It is probable that none of the phenomena of hysteria, unless it be some of the paralyses, more closely resemble the symptoms of organic disease, and are therefore more difficult to be recognised, than tremor. "It is in this fact," says Dutil, "that is found the explanation of those almost miraculous cures of paralysis agitans obtained with a simple play of mirrors; of sclerosis en plaques without plaques of sclerosis." The importance of this study can be fully appreciated only when it is remembered that the diseases which tremor simulates are among the most hopeless in nervous pathology, such as paralysis agitans and insular sclerosis; or are the subjects of litigation in our courts of law, such as the so-called traumatic neuroses; or finally, are the products of poisons, taken in the arts or in self-indulgence, such as mercury and alcohol.

The tremor of paralysis agitans is said to be closely simulated by some tremors of hysteria. In it the rhythm is slow, and persists during repose, not being exaggerated by voluntary movements. This form, there is reason to believe, has misled some competent observers, who have made extraordinary claims of having cured cases of shaking palsy.

From my own observations I conclude that the disease most simulated by hysterical tremor is insular sclerosis, or sclerosis en plaques. The points of this resemblance are as follows: First, the character of the tremor. In insular sclerosis the tremor is excited, and much exaggerated by voluntary motion. The movement of such a patient attempting to carry a tumberful of water to his lips is characteristic. This movement is really not

so much a tremor as a jerky to-and-fro motion. During repose, however, the tremor is almost, if not quite, absent. Second: The speech is often drawling, monotonous, or embarrassed. Third: The mental faculties are seldom involved, but the patient is often emotional. Fourth: The age coincides with that in which hysterical tremor is common; especially in women—from twenty to forty years. The points of contrast, however, are equally marked and definitive. They are as follows:—First—The tremor most common in hysteria, that known as the "type Rendu," is persistent and very evident during repose. Even when the patient sits up it is much exaggerated, and imparts a sense of general tremor to the hand of the observer when he presses it upon the patient's shoulder. While it is much exaggerated by voluntary movements, and often is marked by waves of exacerbation passing over the patient's frame, it does not lose its essentially rhythmical tremulous character, and become as jerky and incoördinate as in insular sclerosis. This fact is confirmed by Charcot, who says that while the amplitude varies the rhythm does not. It is also much increased usually by simply watching the patient—a most significant fact. Second—While the speech may be affected, especially in typical hysterical ways, as aphonia, the drawling, stammering speech of sclerosis is not truly imitated. It is but just to say that this statement is not exactly in accord with some French observers. Third—The mental faculties exhibit hysterical perversions and lacunæ which are not common, in my observation, in insular sclerosis. Fourth—There are no pupil-changes, nor nystagmus. Rendu says that nystagmus has never been noted in hysterical tremor. Fifth—Hysterical stigmata can always be elicited, as a rule, by an expert examiner. These points of comparison and contrast are drawn from my own observation, and are confirmed by the case here reported. I think these deductions are almost universally applicable, because, while not denying the various types of hysterical tremor of Dutil and Charcot, I am strongly inclined to believe that this particular "type Rendu," is the most common of the grave and persistent varieties of the disease.

The pseudo-sclerosis of Westphal has been relegated justly by French writers almost unanimously to the catalogue of hysterical tremors. The accuracy of his statement that the affection cannot be distinguished from true insular sclerosis is more than doubtful. Rendu also describes two cases, in one of which he had made a diagnosis of insular sclerosis. In these cases some of the ordinary stigmata of hysteria were always present, as apoplectiform and epileptiform attacks, evanescent paralyses, and sensory changes, as anæsthesia, etc. "It follows from these facts," says Rendu, "that in some cases, less rare probably than is supposed, hysteria may show itself clinically by a generalised tremor,

resembling that of sclerosis en plaques." "The error is the more easy to be made as the cerebral symptoms of sclerosis are represented, and as the troubles of intelligence and of speech are closely analogous in the two cases." Finally, he claims that the character of the tremor does not constitute a certain criterion.

From the practical standpoint the recognition of hysterical tremor due to trauma is of the utmost importance. Accidents by rail and by machinery have become so common, and in consequence litigation over damages is so frequent, that every subject connected with such accidents is bound to be tested with the most rigid scrutiny. The subject is one of peculiar difficulty, and can be treated here but briefly, and only for the purpose of emphasising what has been said already, *i.e.*, that in cases of tremor hysteria must be recognised on the one hand, or eliminated on the other, as the case may be, before testimony can be regarded as thoroughly scientific. It is now a too well-recognised fact that hysterical tremor is frequently caused by trauma to be ignored. Oppenheim, and those who blindly follow him in this country, seek to disguise old facts under new terms, as "traumatic neuroses," etc., but some at least of their writing does not stand an exact criticism. Charcot, who notes that this tremor is frequently referred to in recent reported cases of "traumatic neuroses," says that this "ought to be included in the history of hysteria, and to be recognised more frequently in men." This opinion is shared by Gilles de la Tourette. Even Oppenheim in his description of the tremor following concussion, emphasises its hysteroidal character. "These tremors," he says, "are increased when the patient is watched by the physician, showing the mental causation. . . . The fact that these lessen when the attention is withdrawn from them, or during rest, is another matter suggesting simulation. I have occasionally seen tremors which closely resembled those of sclerosis. The intimate relation of these shakings to the mental state of the person afford differential points." The hysterical character of the symptom could not be more clearly indicated. Clinically, this tremor following trauma, cannot be distinguished from the tremor of hysteria, while it is identified with the latter usually by well-known stigmata.

The toxic hysterias claim our attention here for a moment. Tremor is a well-known evidence of various toxæmias, specially of alcohol, lead, and mercury. It is not always easy, however, to eliminate from these cases the etiological factor of hysteria. These toxic hysterias, as, for instance, lead hysteria, present some difficult problems. It is common to attribute all the patient's nerve symptoms to the poison from which he suffers. But the problem often is: What is the relation of hysteria to the manifestations attributed to the poison? Few persons in this

country can have failed to observe hysterical symptoms, often grave, in chronic alcoholics. The same class of symptoms may be seen occasionally in cases of poisoning by lead and mercury.

The fact seems to be that the metallic poisons, as well as alcohol, can excite hysterical symptoms in predisposed persons; and the fact of alcohol being a well-known hysterogenous poison is a presumptive proof of the same power in lead and mercury, and especially with reference to tremor. The whole subject needs further investigation.

The paraplegic type of hysterical tremor may closely simulate the so-called spinal epilepsy of Brown-Séquard due to organic cord disease. The resemblance is increased by hysterical contractures and hysterical dysuria. The rhythmical reflexes, or clonus of organic cord disease are, however, excited, as a rule, only by putting the muscles in tension. Volition has not so much to do with them as this state of tension, even artificially produced; for instance, resting the balls of the toes on the floor, with the heels elevated. Attention, or the sense of being watched, has no influence. The movement is entirely involuntary and organic. The presence or absence of hysterical signs also avails for diagnosis.

The tremor of hysteria is said to resemble sometimes that of Basedow's disease, and also that of general paresis; but in both these affections other and characteristic symptoms would determine the diagnosis—*The American Journal of the Medical Sciences, September*, 1893, *p.* 267.

15.—THE DIAGNOSIS OF CEREBELLAR TUMOURS.

By Henry Ashby, M.D., F.R.C.P., Physician to the General Hospital for Sick Children, Manchester.

The history obtained from the friends usually includes, as symptoms, headache, more or less vomiting, and squint. In young children it may be that enlargement of the head and more or less blindness are early noticed.

An examination of the patient elicits the fact that the headache is either frontal or occipital, and of varying intensity; in one of my cases the pain was always referred to the right occipital region, and the boy would sometimes be found asleep with his hand placed on this spot. At the *post-mortem* examination a large sarcomatous tumour was found in the right lobe of the cerebellum. It is, however, not common for the patient to be able to localise the lesion in this way. The headache

is usually described as an "ache" rather than as a sharp pain, but in some cases I have known it to be intense, suggesting the presence of meningitis. The vomiting, like cerebral vomiting generally, is fitful and uncertain; as a rule it is not persistent, and it comes and goes in an erratic manner. It is rarely troublesome when the patient is at rest in bed. Internal squint is in my experience an early and frequent symptom; it is not always double, and sometimes one eye is affected more than the other; the strabismus is due to a paresis of the sixth nerves, and not to a spastic condition of the internal recti. On one occasion a boy who suffered from headache, and who had developed an internal squint, was operated on for the strabismus by a surgeon; the latter, however, altered his opinion with regard to the case when he discovered optic neuritis to be present. It turned out eventually that the boy had a cerebellar tumour. Optic neuritis is a common and early symptom; greater or less limitation of the field of vision and blindness usually follow.

In all cases there is sooner or later a peculiar gait or walk, due to more or less weakness in the legs. This peculiar gait is often described as "ataxic," and "cerebellar ataxia" is sometimes said to be present; or there is a staggering gait, or a difficulty in maintaining the equilibrium. Thus Dr. Donkin writes: "The chief characteristic of cerebellar as distinguished from other tumours is disturbance of equilibrium, especially shown by a more or less general ataxia when the body is unsupported, without any true paralysis." Sometimes attention is called to a patient's supposed tendency to fall forward or backward, or to one side. Now it is certainly true that the patient's friends often give a history of staggering or easily falling, and if a child with a cerebellar tumour is got out of bed and made to promenade up and down the ward, he will most likely sway and easily fall, or he may start forward, as if wound up, in a clumsy headlong way. But I confess to be sceptical with regard to the existence of a special "cerebellar ataxia," and I cannot call to mind any case in which I could satisfy myself that it existed. The gait of a child with a cerebellar tumour is very much that of a child learning to walk; there is a good deal of clumsiness and a great readiness to fall, but this is due to a weakness or paresis of the limbs, and not to ataxia. When there is a spastic rigidity, with an over-action of the gastrocnemius group and of the flexors of the knee, there is necessarily a clumsy gait with a tendency to fall forward. I have never been able to satisfy myself that in any given case, apart from the results of a spastic rigidity, there was a tendency to fall on one side or in any given direction.

An increased tendon-reflex is indeed the rule, but occasionally it is certainly absent or diminished. I cannot give a reason for

this, and I doubt the correctness of the one that has been given, namely, that it is due to a destructive lesion of the cerebellum.

Enlargement of the head is common ; this takes place early in young children on account of the readiness with which the cranial bones yield to the internal pressure, but it may take place also in children of six or seven years of age.

Eclampsia is not uncommon ; the general type is that which consists entirely of tonic spasms ; there is retraction of the head, rigidity of the limbs, and frequently opisthotonus. Death may take place in one of these attacks on account of the spasms of the respiratory muscles.

Facial paralysis, mostly single and slight, and also nystagmus, are among the occasional symptoms.

In the later stages, should the patient survive, the limbs pass into a condition of semi-rigidity ; at first this is temporary, but later it becomes permanent. The arms as well as the legs are affected, while the head becomes more retracted and fixed. Marked wasting is certain to ensue in the late stages, and various trophic changes, such as sloughing of the eyes and bed-sores, generally follow.

Are the above symptoms the result of a destruction of a portion of the cerebellum? In my view the answer must be in the negative ; they are the symptoms produced by a gradually increasing dropsy of the ventricles, due to the tumour of the cerebellum stretching the tentorium cerebelli, and obstructing the return of blood from the veins which drains the ventricles, and which empty themselves into the straight sinus. If the cerebellar tumour produces any symptoms *per se*, they are masked by those produced by the hydrocephalus. In connection with this we may bear in mind that cases have been reported in which there has been a congenital absence of one-half of the cerebellum, and in which no symptoms have been observed during life. As a result of this obstruction of the *venæ Galenæ*, fluid is pent up in the lateral ventricles and also in the third and fourth, and the surrounding parts are compressed. All the ventricles become dilated, the aqueduct of Sylvius becomes large enough to admit the forefinger, and the pons is flattened. The sixth nerve is compressed beneath the pons, giving rise to internal strabismus, and the facial may be compressed also. Pressure of the fluid on the motor tracts gives rise to the paresis of the limbs and consequently to staggering gait, and at a later stage to spastic rigidity. The headache is presumably caused by the stretching of the tentorium. Whether the choked disk is the result of a reflex irritation, or of a disturbance of the circulation, is an open question. It is curious to note that in chronic hydrocephalus where the large quantity of fluid is due to an excessive secretion without any obstruction of the veins,

there is only exceptionally paralysis of the sixth nerves and rarely optic neuritis, though there may be blindness. These cases, however, are either congenital or commence in early infancy before the sutures have united, so that tension is relieved by the enlargement of the skull.

With regard to the differential diagnosis between hydrocephalus, the result of the growth of a cerebellar tumour, and hydrocephalus due to subacute meningitis, or to a chronic simple effusion, difficulties are certain to occur. In infants or young children suffering from enlargement of the head, vomiting, and rigidity of the muscles of the neck with retraction of the head, we may be in doubt whether the child suffers from a chronic basal meningitis or from a cerebellar tumour. In these cases the temperature might help, there being in all probability an evening rise of a few degrees in meningitis, while the presence of optic neuritis would favour the diagnosis of tumour. In simple effusion the case is usually very chronic, and optic neuritis rarely occurs.

To sum up as regards diagnosis. The symptoms of a tumour of one of the lateral lobes of the cerebellum are those of a gradually increasing hydrocephalus, with the addition of optic neuritis and vomiting. It is only occasionally possible to say on which side the tumour is situated, and then only by means of the pain, which may be referred to the actual spot. The so-called ataxic gait is due to paresis or semi-rigidity of the limbs. When a tumour occupies the middle lobe, we should expect symptoms of direct pressure on the floor of the fourth ventricle.—*The Practitioner*, *December*, 1893, *p.* 402.

16.—ON THE ELECTRICAL TREATMENT OF INFANTILE PARALYSIS.

By H. Lewis Jones, M.D., F.R.C.P., Medical Officer in charge of the Electrical Department, St. Bartholomew's Hospital.

The long lasting paralysis and atrophy which this disease so often leaves behind it tends very greatly to discourage one's efforts of treatment, and indeed it is only by watching and treating patients for months or years that their slow and gradual improvement becomes perceptible, as the result of an electrical testing which has shown seriously impaired reactions. Many people have been told that their children were beyond reach of treatment in the more severe cases. It is quite certain, though, that prolonged electrical treatment will do much good to nearly all cases of infantile paralysis, provided that the children are

young and not more than two or three years have gone by since the incidence of the disease. Even after that lapse of time something may be done.

In an electrical department cases of infantile paralysis are apt to collect together in great numbers, and indeed they may become so numerous as almost to monopolise the whole energies of the department. Soon after commencing the electrical treatment of this disease it occurred to me one day that the numbers in attendance were becoming unmanageable, and that it might perhaps be as well to discharge some of the most unpromising cases, but I found that the mothers of the children were unanimous in declaring that the treatment was doing good, and that they all begged to be allowed to continue attending longer. As this was encouraging, I thought it would be profitable and interesting to watch the cases more closely and for a longer period, in order to see whether some satisfactory progress might not be gained. Since then I have been able to recognise the improvement, and to discharge very considerably improved a fair number of children who came under treatment in a more or less crippled condition.

There is a formula in which the prognosis of infantile paralysis has been commonly summed up. It is as follows : If the ganglion cells supplying the muscle are destroyed recovery must be impossible, and if the cells are not destroyed treatment is unnecessary, because the patients will get well of their own accord. This formula, I am sure, has done a great deal of harm for it is widely accepted because it saves such a lot of trouble. But it starts from the assumption that the disease must either destroy all the motor cells of a muscle or else must leave them all uninjured, and this assumption is certainly not correct. On the contrary, the damage to the motor cells may be of any degree of severity or of any extent, and the paralysis may vary between slight weakness and complete loss of all motor power.

It is, I think, reasonable to suppose that a lesion in the motor tract of the cord may destroy some of the nerve cells of the nucleus of origin of a muscle, while others in the same nucleus may escape, and this might especially be the case if the nucleus of origin is an extensive one. Although the nuclei in the anterior cornua have not yet been mapped out into groups corresponding with the muscles they supply, yet there is evidence to support the view that many of these centres extend for an appreciable distance longitudinally in the cord.

If this be so in the human subject one can readily understand how a muscle might be partly crippled by poliomyelis and yet retain a more or less complete degree of voluntary power through the support of such of its ganglion cells as might

happen to survive. There is also the possibility of neighbouring cells taking up the work of those destroyed. The object of electrical treatment would then be to stimulate and develop any surviving fibres, and if possible to make them numerous enough and strong enough to form a useful muscle.

Duchenne, long ago pointed out that a muscle crippled by infantile paralysis may still contain a few living functional muscle fibres, and that these may easily be overlooked in an ordinary electrical examination of the muscle, but that they may be successfully cultivated by persevering treatment. There is no doubt that cases admitting of similar interpretation do occur for example, I have seen a quite respectable sized mass of calf-muscle develop in a limb which for two years at least had shown no trace of electrical reaction of any sort in that region, and the same in other muscles, notably in a deltoid muscle, which, after remaining for nearly three years completely atrophied as the remnant of an extensive paralysis of the upper arm, is now beginning to grow, and to show faint contractions of normal quality to the induction coil.

A muscle which is greatly atrophied, and in large part the seat of fatty degeneration, may still contain a fair number of active muscle fibres scattered in it, and these may remain in a dormant state for several years and yet be capable of great development if eventually they come under electrical treatment. Duchenne has related several cases of this sort, where treatment commenced as late as four years after the onset of the disease gave most favourable results.

The majority of the cases of infantile paralysis with which I have had to do are those with paralysis of the leg muscles, and in many of them a year or two years or more has elapsed since the incidence of the disease. Apparently the lower limbs are much more commonly affected than the upper, but this may be partly accounted for by the sources from which the electrical department at St. Bartholomew's Hospital is supplied, for a large number of cases are sent over by Mr. Walsham from the Orthopædic Department, having been brought there in the first instance because of some lameness. Among the poor it often happens that the paralysis is overlooked or neglected, until the time has come for the child to begin to walk, and then, or even later, an effort is made by the parents and the child is brought for medical advice. I mention this in order to show that these cases have, many of them, been left to improve spontaneously before coming under treatment, and in fact that they are cases of old standing, who have undergone what is called expectant treatment without recovery. The material then is not of the most favourable kind, and some of them are in a sorry plight, but all the cases that come, however hopeless

they may look, are put under treatment, and all improve, some only a little, others very much.

Among the cases two different types exist. In one the muscles are thin, but they present reactions which though weak are normal in quality both to the induction coil and to the constant battery. In the other group the muscles are paralysed, atrophied, and show only a reaction of degeneration, or even no reactions at all.

It cannot fairly be said of the first group that they will recover spontaneously, their very presence in the department shows that they have failed to do so. Under treatment they usually begin to progress from the first and as a rule do very well, but even so their improvement is often a gradual one, requiring treatment for months. When these cases have ceased attending for a time and they are again brought back, the history is usually that the progress of the muscles went on for a time, and then ceased, therefore they are brought again for further treatment; others do better and recover completely from the first, but the affected limb commonly remains rather thinner and rather weaker than its fellow.

I do not wish to imply that no muscle paralysed by poliomyelitis recovers spontaneously, it is certain that many do so recover but rather that there are many cases which remain in a state of very imperfect recovery, even though their electrical reactions are normal, and that these derive immediate benefit from systematic electrical treatment.

With cases of the second class, namely those with great atrophy, paralysis and the reaction of degeneration it is also too sweeping a statement to say that they are incurable, and that electricity can do nothing for them. Electrical reactions do return in muscles which before showed no signs of contraction, and this I have seen a fair number of times.

The routine treatment adopted at St. Bartholomew's with the infantile paralysis cases is as follows :—At the first visit the muscles are tested, the girth of the affected limb measured, and the voluntary power of the paralysed muscles ascertained, and any faulty attitude of the limb noted. The mother is then told that the child must be brought twice a week to the department for six months, at least, for electrical treatment, and she is further told to bathe and manipulate and rub the affected limbs every night for a quarter of an hour in hot water. If irons or other orthopædic appliances are worn the child is to be encouraged to exercise its limbs without them for a little time every night before the evening bath. By impressing upon the mothers the need for patience and perseverence, one is able to ensure their hearty co-operation, and this is the most important factor of all. The electrical treatment of the children is for the

most part carried out at the hospital by the mothers themselves, who are shown how to use the electrodes, and quickly learn what is required. A very fair proportion of the total cases settle down into regular attendance. Those who fall away do so usually in the earlier months of treatment, those who remain remain long.

The first signs of improvement are a better circulation in the affected parts, and disappearance of chilblains and sores, and a gradual gain of voluntary power.

The return of electrical reactions comes later, and it is common when all contractility has been lost for the normal reaction to the induction coil to return without an intermediate stage of contraction to galvanism only. This may perhaps be explained by supposing that the few latent normal fibres in the wasted muscle have begun to grow and gain sufficient strength to produce a visible contraction.

The apparatus used :—Both the induction coil and the constant current battery are employed for the electrical treatment. Custom has selected the constant current for the treatment of muscles showing the reaction of degeneration, reserving the induction coil for the less severe cases in which the muscles retain the power of contraction to the currents of the induction coil. This choice of current is probably based on theoretical grounds. It is true that a muscle showing the reaction of degeneration, will contract to the constant current only, and in so far as the contraction of the muscle is a good thing for the muscle, the constant current may be better than that of the induction coil ; but it is by no means certain that the amount of benefit can be measured by the amount of contraction set up in the muscle. A muscle which is completely cut off from its nucleus of origin will continue to degenerate and waste, however persistently it may be made to contract by treatment with the constant current. This matter of the relative advantages or virtues of constant and interrupted current dates from a long way back. Each has been warmly advocated by its partisans to the exclusion of the other since the days of Duchenne and of Remak.

But in paralysis any form of electrical application is of value simply as a most convenient way of stimulating the activity of the living tissues of the part under treatment, and, as a matter of fact, even with the constant current of a battery the stimulation is chiefly obtained when the current is made to vary by interruptions or reversals, or by movements of the electrode over the surface.

The recent investigations of Messrs. Gautier and Larat seem to show clearly that varying currents have a greater stimulating action on the tissues than steady currents, and that the former promote the metabolic activity of the living cells to a very

much greater extent than steady currents do, and in practice, I have found that the interrupted currents of the induction coil have quite as high a value in the treatment of infantile paralysis as the constant current of a battery.

When the treatment has to be put into the hands of a nurse the induction coil is the best, because it is more easily managed and kept in order, and the vibrator with its buzzing sound serves to show that the apparatus is working, and the strength of the current can be readily gauged by feeling it.

Whenever children are to be treated by electricity great care must be taken not to frighten them by sudden shocks, the current used must never be so strong as to alarm them or make them cry, and it is important that the contact breaker of the coil shall work very smoothly and evenly. Many coils are defective in the matter of contact breaker; until lately there has been little attention given to it, and any sort of vibrating spring is thought good enough, but there is all the difference in the world between a good and a bad one. The difficult problem of testing a child's muscles without making it cry becomes much easier with a good coil, and a smoothly acting contact breaker working about forty or fifty times a second. Of all the coils I have tried, those of Gaiffe, of Paris, seem to me to be the best.

It is perhaps a little premature to discuss the value of the electrical supply from the house-lighting mains, as I have not yet had opportunities of trying it upon cases of infantile paralysis, but from general considerations of the quality of current on the alternating system of supply I am disposed to think that that form of current properly applied through a transformer should be of distinct value in the treatment of infantile paralysis.

When the lower limbs are the seat of the paralysis an improvised electric bath is an excellent method. An ordinary wooden tub or earthenware foot-bath filled with warm water is taken, the electrodes in the form of plates of metal are suspended at the two ends, and the child dressed in a short waistcoat, is put into the bath in a sitting position. The current is very well borne in this way, and the whole extent of the paralysed parts comes simultaneously under treatment. This plan can easily be carried out at home by the nurse or mother of the child. The strength of the current is gauged by putting the hands into the tub, one at each end. This plan requires no special knowledge of anatomy, it is efficient and likely to be persevered in, and this question of perseverance over long periods of time is the key to success. Even if only one of the lower limbs be affected, there is no reason why the bath should not be used, and if the sound leg be flexed and drawn up most of the electrical current can be diverted into the affected one. — *Medical Press and Circular*, *March* 21, 1894, p. 301.

17.—ON OPTIC ATROPHY IN DISSEMINATED SCLEROSIS.

By Thomas Buzzard, M.D., F.R.C.P.

Thanks to the kindness of colleagues at Queen Square I am able to give some figures which are of much interest. Dr. Head finds that out of 68 hospital cases of disseminated sclerosis there was pallor of the discs in 29—that is, in 42·6 per cent. Out of 32 cases of the same disease occurring in my private practice, of which the records are complete enough for tabulation, there were 14 examples of pallor of discs. Adding together the hospital and private examples, we obtain 100 cases of disseminated sclerosis, in 43 of which, or 43 per cent., there was pallor of the discs. I use this expression because in some few instances the change was but slightly expressed, although well pronounced in the large majority, but there can be no doubt, I think, from comparison of the associated symptoms, that in all there was atrophy of the discs.

The remarkable frequency of occurrence of some atrophy of the optic nerve in cases of disseminated sclerosis is a fact which has only comparatively recently been recognised, and is still far from being appreciated. Ten years ago the distinguished opener of the discussion at the Ophthalmological Society on "Eye Symptoms in Disease of the Spinal Cord" remarked, "So rarely is atrophy associated with other lesions that the question may practically stand—In what proportion of the cases of atrophy are there indications of ataxy?" This fairly represented, I think, at that time, the general impression amongst neurologists. But it was not long after this that doubts as to the correctness of this view began to grow upon some of us, and in a communication to the Neurological Society in January, 1890, I called attention to the extraordinary frequency of changes in the disc in disseminated sclerosis. This was illustrated by the fact that out of ten cases which were reported by me (but not selected on this account) in five there was distinct evidence of atrophy.

It is interesting to compare with these figures the experience of some Continental observers. Marie, in his recently published work, refers to the observations of Uhthoff and Parinaud, which, it will be seen, are in striking accord with the experience which I have just related. I am indebted to his work for the references.

Out of 100 cases of disseminated sclerosis Uhthoff found only 48 in which the fundus oculi was normal, whilst in these 48 cases there were 5 in which, although the discs presented no

atrophic change, there was a history of visual trouble. It is remarked by Uhthoff that "with the exception of cerebral tumours and tuberculous meningitis there is no disease of the nervous system (even including tabes) which is so often accompanied by ophthalmoscopic changes as disseminated sclerosis."

Uhthoff describes the following degrees of alteration of the papilla :—(*a*) The papilla is atrophied and deprived of colour : the reddish reflection of the normal papilla has entirely disappeared. (*b*) There is incomplete decoloration of the whole papilla. The internal parts of it still preserve a slight reddish reflection. (*c*) The external (temporal) regions of the papilla are alone decoloured, whilst the tint of the internal parts is quite normal. (*d*) There is the appearance of optic neuritis (Parinaud-Uhthoff), hyperæmia, vessels veiled and dilated, prominence of the papilla, &c.

This description coincides generally with my own observations. As regards the last clause (*d*), to prevent misunderstanding, let me say that I have on several occasions noted dark grey discolouration, which I have described as "somewhat resembling the tint of hyperæmic grey matter of cerebrum." The condition has never in my experience been that which is usually called optic neuritis or papillitis.

Alterations of Visual Field and Dyschromatopsy.—The visual impairment varies very much. Parinaud (again I quote from Marie) describes several types :—(*a*) Slow and progressive diminution of visual acuity in the two eyes, reaching, perhaps, from $\frac{1}{3}$ to $\frac{1}{7}$; the field of vision is normal, but there is a little dyschromatopsy for red and green, only recognisable by the photometer ; this form corresponds with a beginning of decolouration of the external region of the papilla. (*b*) The development of visual troubles is rapid ; it may go on to complete blindness, but this is transitory ; an improvement takes place which is often carried far ; frequent dyschromatopsy, different alterations of the visual field. The visual troubles are bilateral. They correspond with an atrophic decolouration of the papilla which is very pronounced, and persists in spite of the amelioration of vision. (*c*) The impairment of sight is unilateral, more accentuated and persistent ; the field of vision presents an irregular contraction ; there is no dyschromatopsy. This form is associated with well marked white atrophy of the papilla.

Uhthoff describes the four following varieties of form of the visual field :—(*a*) Central scotoma with retention of the periphery of the visual field. (*b*) Central scotoma with concomitant contraction of the periphery of the visual field. (*c*) Peripheral contraction of the visual field which is irregular, with relatively intact central vision. (*d*) Concentric contraction regular,

analogous to that of hysteria. (This, he says, is the most rare—1 in 24 cases.)

The visual troubles are very often unilateral, or when bilateral they are not symmetrical. In half the cases Uhthoff has noted a sudden onset, in the other half the symptoms have been progressive. The visual troubles sometimes do not come on till the disease has existed for some time; sometimes they constitute the first manifestation. There appears to be occasionally a kind of parallelism between their intensity and that of the other symptoms.

It was originally pointed out by Charcot that amblyopia was a frequent symptom of cerebro-spinal disseminated sclerosis. He also remarked that, contrary to what takes place in posterior sclerosis, it is very rarely issued in complete blindness, and this notwithstanding that patches of sclerosis have been found, after death, occupying the whole thickness of the nerve trunk. In such cases, during life, a simple enfeeblement of sight had been noted. He thinks that this shows that the functional continuity of the nerve tubes is not absolutely interrupted, though these, in their course through the sclerosed patches, have been deprived of their medullary sheaths, and reduced to axis cylinders.

I do not think that I have ever seen a case of disseminated sclerosis in which the power of distinguishing light from darkness was lost. Magnan, however, has described a case in which there was papillary atrophy of both eyes, with complete blindness.

Transitory Blindness in Disseminated Sclerosis. — I am unfortunately unable, from inadequacy of record, to give full statistics on this point. The symptoms, however, must be of considerable frequency, for it was noted in the history of 5 out of 18 cases which I have reported in my late work. Special inquiry on the point would, I have little doubt, have elicited evidence of a very much larger proportion. Of one patient it is noted :—"Four years ago she lost to a great extent the sight of the right eye, but after a time regained it completely for a short period, subsequently, however, losing it again. At the present time she has little or no vision with the right eye, and very imperfect sight with the left. The right optic disc is white and atrophic, the left normal."

In another case there was a history of loss of sight of the left eye, with gradual recovery; and later the right eye lost its sight, but recovered gradually. The right disc was seen to be white, with a glistening metallic look.

Another patient had, two years previously, entirely lost the sight of the left eye. It recovered to a certain extent in about six weeks. One year later the sight failed in the right eye,

though not to the same extent. I found no visible change in the discs. A lady three years previously could not see to read and write, but recovered the power, and for two years could read fairly small print. When I saw her she could hardly read No. 4 at all. Both discs were found to be distinctly atrophic. Another lady lost the sight of the left eye almost entirely in the course of a week or two, but after some little time it returned. When seen nothing abnormal was to be detected with the ophthalmoscope. The sight of the right eye was then failing.—*British Medical Journal, October* 7, 1893, *p.* 780.

18.—ON THE NEUROSIS FOLLOWING ENTERIC FEVER KNOWN AS "THE TYPHOID SPINE."

By William Osler, M.D., Professor of Medicine in Johns Hopkins University.

[Dr. Osler narrates two cases of indefinite pains in the back, especially on movement, associated with a general neurasthenic condition, coming on after convalescence from typhoid fever. After being disabled for some time both patients recovered. There were no signs of organic disease in any part of the body in either case, both patients being in perfectly good physical health. The details of Dr. Osler's cases are not reproduced here.]

In 1889 Dr. Gibney, of New York, described at the American Orthopædic Association a sequela of enteric fever which he called "the typhoid spine," and which he regarded as a peri-spondylitis—"meaning an acute inflammation of the periosteum and the fibrous structures which hold the spinal column together." He stated that his reason for the use of the word was "the production of acute pain on the slightest movement, whether lateral or forward, and the absence of any marked febrile disturbance or neuralgia."

In 1890, in a discussion at the Association of American Physicians following the reading of a paper "On Some Points in the Natural History of Enteric Fever," by Dr. James E. Reeves, Dr. Loomis, Sr., referred to Dr. Gibney's observations and to one of the cases he had asked Dr. Gibney to see. Dr. Loomis knew of no reference in literature to a similar condition. Dr. Jacobi at the same meeting, besides protesting against the introduction of a new name, such as "typhoid spine," suggested that, in the absence of temperature, it might be one of two things, either a neurosis or a spondylitis, remarking that mild forms of spondylitis are not so uncommon as they are believed to be.

In the "American Text-book of Medicine" (page 90) Dr. Pepper remarks in the article on typhoid fever that he has observed in a series of cases "obstinate periostitis of the sternum or of the crests of the ilia, or in two instances, judging from the location of the pain and from the effect of movement of the trunk, of the front of the spinal column." Eskridge has also described a case.

I have not been able to find any other references in text-books or monographs on typhoid fever, either in English, French, or German. My attention had not been called to the condition until recently, unless perhaps a case which I saw several years ago with Dr. Grassett in Toronto was an illustration—a young officer, invalided from India after a prolonged fever, who had for many months attacks of the most severe pain in the back on the slightest movement, which incapacitated him completely; though when seen by me he looked strong and robust and had a good appetite. He subsequently got quite well.

Cases II. and III. in Dr. Gibney's paper are very much like my cases, particularly in the fact that the symptoms developed after convalescence, and in both instances there was a slight trauma—in one a fall while playing tennis and in another a slight fall on the left hip while skating. In the case reported here the patient also lays a great deal of stress on the jar which he received by the sudden jerking of the cable-car. In both the prominent symptom was pain on movement, and there was an absence of all signs of organic disease.

An explanation of the symptoms in these cases is by no means easy. As already mentioned, Dr. Gibney regards the lesion as a perispondylitis, an acute inflammation of the periosteum and fibrous structures holding the spinal column together; and with this view, judging from the quotation made, Dr. Pepper seems to agree.

Joint and periosteal troubles are by no means rare sequences of typhoid fever, but the symptoms do not usually develop (as in three or four of the cases here described) at so long a time after convalescence has been well established. The periostitis, seen oftenest about the sternum and the ribs, proceeds, as a rule, but not necessarily, to suppuration. I have on several instances seen a periosteal swelling disappear without suppuration. We do not have, so far as I know, protracted periosteal thickening, lasting for weeks or months, without suppuration; and it is difficult to conceive of the attacks of pain, such as are described in the second and third cases of Dr. Gibney's and in the second case which I here report, lasting for months, due to a simple perispondylitis, which in none of the cases passed on to suppuration. The general impression given by the patients whom I saw was that they were neurasthenic, and while, of course, it would

be very illogical to assume that all of the instances are due to the same cause, yet I cannot help feeling that many of them are examples simply of a painful neurosis, an exaggerated condition of what was formerly known as "spinal irritation," and analogous to the condition of "hysterical spine" and "railway spine," in which the patients suffer on the slightest movement of the back or of the legs. In the second case reported the whole behaviour during the examination was that of an hysterical patient ; thus, he could not think of lifting a leg—even the idea was enough to give him agonizing pain—and yet in a few minutes he lifted it himself as he got out of bed. So also the slightest pressure in the lumbar or iliac regions would cause him to scream out ; but while his attention was diverted pressure could be made with the greatest facility. The rapid recovery in a few days, with disappearance of all the symptoms, is quite inconsistent with any chronic perispondylitis.

I have recently seen a case presenting somewhat different features, but which I think may also be reasonably classed as a post-typhoid neurosis, in which, after a protracted and severe attack of typhoid fever with delirium and severe nervous symptoms and tardy convalescence, the patient had disturbed sensations in the feet and legs, aggravated shortly after, but diminishing somewhat within five or six months, never entirely disappearing, and recurring with some intensity during the period characterised by pronounced neurotic manifestations. Unlike the cases before described, there were no pains in the back and abdomen, only a sensation of weakness. The symptoms suggest (1) central (spinal) lesion, (2) neuritis, or (3) a neurosis. From his statements it was evident that the doctor in attendance feared a central affection ; but the patient's condition two years from the date of the fever would speak very strongly against any such view ; nor does the case conform in its clinical history to a neuritis. The man insists that the feelings which he has now in the feet were also present during the convalescence and some months subsequently. There did not appear to have been any very special muscular weakness, such as sometimes develops after an attack of typhoid fever without any evidence of peripheral neuritis. In the paper by Dr. George Ross, "On Paralysis after Typhoid Fever," he refers to those cases in the following words: "It is not unusual after typhoid fever of considerable severity to find a definitely enfeebled condition of the lower extremities persisting for some time, and sometimes a person never entirely recovers his capacity for walking long distances. Such paretic cases have never been specially studied, but it is probable they would if any should fall under the head of defective innervation from prolonged exhaustion of the nervous centres." On the other hand, in the case under

discussion the history and the general appearance of the patient suggest a neurosis following typhoid fever. The paræthesiæ such as described are not uncommon symptoms of neurasthenia, in which also exaggerated reflexes are not at all infrequent.

It is not unlikely that under the designation of "typhoid spine" Dr. Gibney has described several distinct affections, and I would not be understood as holding that there may not be a perispondylitis. Nor are all of the painful backs following typhoid fever neurotic.—*American Journal of the Medical Sciences, January*, 1894, *p.* 23.

DISEASES OF THE ORGANS OF CIRCULATION.

19.—ON IDIOPATHIC HYPERTROPHY OF THE HEART.

By S. Saache, M.D., Lecturer on Pathology in the University of Christiania.

It is impossible to give an exact definition of the subject in a few words. We have presented to us in reality a clinical picture—a little vague, it is true—embracing organic affections very different the one from the other, but all having one common characteristic; enlargement of the heart without obvious anatomical—or, if the term is preferred, mechanical—obstacles to the circulation, while at the same time the valves are intact, or are affected only by lesions in no way proportional to the other leading anatomical and clinical symptoms.

The degree of enlargement may vary also within very wide limits. On the one hand, it is in this condition that we meet with the *cœur de bœuf* in its most characteristic form, while on the other we shall fall into error if we fix our attention on size alone. A large heart may work well, as is well known, while a heart but little enlarged may, on the contrary, work very ill. In the case of the heart, it is the same as in the case of another hollow muscle of the body—the stomach. The important point is not the actual size of the organ but the way in which it acts or its insufficiency. For a certain number of cases it is not possible to find a more appropriate designation than the English term, "weak heart"; in consequence this term has been introduced into Continental usage to signify cardiac degeneration in the most general sense.

As compared with valvular affections in which rheumatism plays so predominant a part, the etiology of the affections we are considering offers many points of interest, especially from the hygienic—or, if the term be preferred, the social—point of view.

Time will not allow me to enumerate all the predisposing causes, and I shall confine myself to citing here (1) heredity, one of the principal causes indicated by Albertini; and (2) those conditions which, to use the phraseology of Bouchard, betray their influence by defective nutrition.

Among the determining causes there are two which, above all others have given rise to discussion during recent years—alcoholism and excessive muscular exertion.

Alcoholism is in this connection an influence of considerable importance, especially when it takes the particular form of beer drinking which, according to the interesting researches of Bollinger, is the preponderating cause of the form called pure idiopathic hypertrophy. Plethora caused by the ingestion of immoderate quantities of beer and the augmented blood pressure thus produced, combined with a direct injurious action upon the heart muscle, afford an explanation of the increasing part which cardiac affections have come to take in the mortality of the city of Munich, disputing as they do the first place with tuberculosis. "Beer heart" is indeed the sad reverse of the medal, if I may so say, of that Bavarian beer which is so justly renowned. It is also a new, and not the least interesting, side of the multiform manifestations of chronic alcoholism.

Let us now pass on to consider overstrain, excessive muscular exertion, the injurious influence of which is so evident in all obvious affections of the heart, and used formerly to be regarded as itself sufficient to provoke the gravest perturbations in the action of the heart muscle. This heart strain deserves, according to the majority of contemporary writers, a large place among the determining causes of the non-valvular hypertrophies. It is true that all physicians are not in complete agreement on this point.

Nevertheless, though it is proper to be a little cautious, yet if we take into consideration the numerous and conscientious observations proving the dangers of heart strain, it is impossible to feel any doubt on the point. I would refer in this connection to the well-known labours of Fraentzel, Leyden, and others. Ought we then to draw the moral that all muscular efforts which might be called a little violent ought to be forbidden absolutely in order to prevent the heart from any risk? No, far otherwise.

To understand the subject the better we must not fail to consider here for a moment a question which, in the present

day, is setting minds in movement and muscles in activity in every part of the world—sport. Among us in Norway, in the ancient times of the Sagas and the Vikings, it was considered a disgrace to die in one's bed far from the field of battle. In those barbarous times, I say, the art of exercising the body was naturally brought to the highest degree of perfection. In later times it fell into decadence, and in Scandinavian countries was very little practised except as an indispensable element in existence. For a long time town dwellers remained almost completely ignorant of it.

Now all this is changed. At the present time it is the youth of towns who stand in the forefront, not only the men and boys, but also the young women and even little girls of 6, 8, or 10 years, who, it is clear, do not intend to let themselves be beaten by anybody.

In consequence of observations such as these, which were well calculated to give rise to certain apprehensions, the hygienic influence of sport was set down for discussion about two years ago at the Medical Society of Christiania. As a general conclusion, it may be said that it is not possible to prove that any permanent derangement of the functions of the heart is produced. This is due to the fact that youth, on the whole, has so much elasticity, and the heart so much reserve force.

But the members of the Society were in agreement upon two points : in the first place, as to the dangers of the abuse of sport and as to the evil which it may bring about when it becomes simply a matter of fashion ; and, in the second place, we were in agreement as to the necessity of precautionary measures, and especially of an age limit in all races. If a competitor makes reasonable demands upon himself, if he be properly trained, and if, it can be hardly necessary to add, alcohol be always severely banished, sport under its various forms ought not only to be considered permissible, but also, it cannot be doubted, the most perfect means of training the muscles of the body in general, and of strengthening the cardiac muscle in particular.

We must not leave this part of our subject without saying something of intellectual overpressure also, the cause of that psychical enfeeblement, so common in our time, which has given rise to the present use of the phrase "*fin de siècle*," and which, though veiled under an appearance of energy, will not escape the eye of the attentive observer. And as a matter of fact it is safe to affirm the existence of an enfeeblement of the heart, a heart fatigue alongside of brain fatigue, which has long been a recognised term.

It follows from what has been said that the affections which claim our attention to-day are, in large part, diseases of civilisation for which we must seek in large towns rather than

in country districts. If, on the one hand, they are, owing to their connection with alcoholism and excessive muscular exertion, to be found especially among the proletariat; on the other, owing to various causes—such as a sedentary life, over-feeding, over-smoking, and *excess* of every kind—the wealthier classes are so far from being exempt that it is not uncommon to meet with these diseased conditions on the highest rungs of the social ladder.

The symptoms of idiopathic hypertrophy obey naturally in their general character the laws which govern the valvular affections, of which the diagnosis is generally so easy. But, from another point of view, the diseases under consideration present a special character, an individuality in their mode of development, often insidious, or, as may be said, masked, so that their diagnosis is rendered the more difficult, a characteristic of these disorders which was well expressed in a remark once made to me by a venerable colleague as the result of his long experience: "Those affections of the heart which are most dangerous are just those which are most difficult to diagnose."

The examination of the pulse naturally comes first. It may be normal, but the contrary condition is not infrequent and the anomalies may be either irregularity or slowness. I omit all other details, and shall enlarge no further on the question of diagnosis, though it has a poignant interest for the clinical observer and for the physician in his daily practice, in order that I may discuss briefly the question of prognosis.

It would seem that in the minds of the general public the prognosis is almost inevitably sudden death. It is, as you are aware, generally asserted that this mode of death has greatly increased in frequency in our day and it is indeed probable that this opinion is not without some foundation, although statistics are wanting upon the point. As a matter of fact one can hardly open a newspaper without seeing a report of the unexpected death of some person or other due, it is added, to a paralysis of the heart. On the other hand let us not forget that nowadays every such event affords the subject of a report in the newspapers and that the works of Lancisi himself prove that sudden death was by no means unknown in his day.

The converse result is also fairly frequent. We may even say that the diseased organ, the heart, proves itself, under certain circumstances, to possess a power of resistance which is almost incredible, a fact which explains how it was that Haller, in his day, came to apply to it the epithet *ultimum moriens*.

In speaking of treatment I must confine myself to sketching some of its main features. When, to use a popular expression, the heart has been declared bankrupt, our object should be, as you are aware, to establish compensation, and to take any steps

calculated to bring it about. The object may be attained in different ways. Among the drugs recommended—their number is legion—to regulate the secretions we may employ, according to the circumstances of the case, digitalis, iodide of potassium, strophanthus, and so on, the last named drug being generally as innocuous as it is efficacious.

The method, which consists in exercising and "training" cardiac muscles, was not unnaturally employed long ago in the treatment of fat persons and of persons who seldom took any exercise except in a carriage. But as contrasted with the method diametrically opposite, the method, that is to say, of "nursing" the heart daily employed by physicians, and that to which the patients themselves instinctively have recourse, it may be said that "training" has only recently been reduced to a system by Oertel in the work which is familiar to everybody. But the most important point is to prevent the development of the evil. Prophylaxis, at least in so far as concerns a particular individual, does not exceed the limits of the possible. The truth of this will be seen from the observations which I have already made.—*British Medical Journal. April* 7, 1894, *p.* 739.

20.—ON CARDIAC FAILURE AND ITS TREATMENT.

By John Curnow, M.D., F.R.C.P., Physician to King's College Hospital.

Dilatation of the heart can be best studied in two groups—viz., (1) those in which it is caused either by primitive degeneration of the muscle fibre itself or by changes in the blood which affect the nutrition of the muscle; and (2) those in which there is some mechanical impediment in the circulation. In the former category will be found the more acute forms, whilst the chronic cases come into the latter, although in these acute symptoms often supervene and betoken a rapidly approaching end. Acute dilatation is often found to a limited extent in cases of anæmia and chlorosis, and the displacement of the apex-beat and the murmurs (especially those heard loudest at the apex), which I regard as generally due to dilatation, although they may be caused by hæmic changes alone, will always disappear under proper treatment. In fatal cases of leukæmia, Hodgkin's disease, pernicious anæmia, and chronic malaria, dilatation of the heart, with pallor or yellowness of the muscle fibre and a flaccid condition of the muscle walls are nearly always found.

In cases of death in acute febrile diseases the heart is dilated and the muscle soft, friable, and flabby. This is partly due to the high temperature which accompanies the fever and marks its severity. In more than one case of fatal hyperpyrexia I have found dilatation of the heart, and have noticed during life the displaced apex, a transverse increase in the area of dulness, a change in the first sound, and irregular murmurs at the apex. In none of them was any valvular lesion found after death. In one case of rheumatic hyperpyrexia, which I attended fifteen or sixteen years ago, in which the temperature rose to 107°F., these signs, including the murmurs, were all present, but they disappeared very rapidly after recovery, and there has never been any suspicion of valvular mischief since. The patient is now a most active and vigorous man. In addition to the mere question of temperature, there can be no doubt that some infective diseases exert a special action on the heart, and may thus induce cardiac failure. Diphtheria stands out so prominently in this connection that I cannot help thinking that influenza, typhoid fever, and typhus fever also exert a special depressing action on the heart. A loss of the prolonged boom of the first sound and its replacement by a short, clear sound is a most valuable indication in these diseases for the free administration of stimulants.

Another group of cases of cardiac failure is those in which inflammatory degenerative changes have taken place in the walls of the heart. A certain amount of myocarditis accompanies all cases of peri- and endo-carditis, but in some cases of acute rheumatism and in some septic fevers the signs of cardiac failure develop so quickly and are so grave that we must suspect a primary myocarditis. Many of these cases are absolutely without abnormal murmurs of friction sounds, though these may be heard at a later stage and are then due to an extension to the endo- or the epicardium. An adherent pericardium, if enormously thickened, gives rise occasionally to an atrophy or diminution in size of the heart, but it more generally acts as a mechanical obstacle to the due contraction of the viscus and leads to a secondary dilatation. Another class of cases in which the symptoms may come on rapidly or slowly is that caused by fibroid degeneration from an interstitial myocarditis or from fatty degeneration of the heart. In both of these classes dilatation is nearly always present and the symptoms are those of cardiac failure. The amount of degenerative change varies greatly and the amount of dilatation also; but they are specially noticeable in cases of fibroid degeneration. Fatty degeneration more especially, and fatty infiltration of the heart, leading to subsequent fatty degeneration of the muscle fibre, are causes of slow dilatation, inasmuch

as there can only be a feeble contraction of the walls controlling the size of the various cavities, which are thus kept in a state of over-distention, but this will of course vary greatly in different cases.

A case of dilatation of the heart, in which organic and functional disease of the heart, lungs, liver, and kidneys co-existed, is narrated by Dr. Stokes as dependent on an asthenic and often a gouty condition of the system, and that excellent physician thought that such cases were common.

It is well known that tobacco, tea, coffee, and alcohol are common causes of palpitation, and especially when these are taken immoderately by dyspeptic, anæmic, or neurotic patients in whom palpitation is a frequent complaint, even sometimes when the use of these stimulants or sedatives is not indulged in. Frequent attacks of palpitation will induce a true dilatation ; for while laborious and well-sustained work, with due nutrition, will cause a hypertrophy, rapid and intermittent contractions, with insufficient nutrition, must lead to degenerative changes and consequent dilatation. The same laws apply to the cardiac as to the systemic muscles, and the same results follow regular and irregular working. In the cases of exophthalmic goitre which I have examined marked evidence of a dilated heart has been forthcoming, and I think that in most cases the murmurs that are so commonly audible in this disease are only rarely to be attributed to structural lesions of the valves, but are more generally caused by the irregular contraction of the ventricles which necessitates an irregular tension on the curtains of the valves.

In the cases of dilatation which are consequent on some obstacle in the path of the circulation the course of events is a matter of everyday experience. If a valvular lesion exists, and the nutrition of the body in general and of the heart in particular through its coronary system is good, compensatory hypertrophy of the muscular walls takes place, and it is only when the compensation becomes inadeqate that the symptoms of dilatation are seen. We should have the same phenomena of hypertrophy and dilatation if, instead of a valvular lesion, any other permanent impediment existed in the course of the circulation. I will refer only to two special cases—viz., athletes and renal dropsy. The connection between athletics and heart disease is a very important one. In my experience among students at King's College and in many other young athletes I have not infrequently seen cases of dilatation of the heart obviously caused by undue athletic exercises. I have consequently been obliged to insist on a discontinuance of such exercises in football players, runners, gymnasts, and oarsmen. In some cases my patients were men of great physique and

well-known athletes. There were amongst them two distinguished football players and one very rapid runner, and I am informed that these branches of sport are specially liable to produce a severe strain upon the heart walls and the circulation. Their first symptom of cardiac failure was shown by palpitation or by a fainting fit after a hard game or a closely contested race. There is always some form of irregularity of the heart's action, and occasionally there has been slight hæmoptysis. The apex-beat is displaced, and the first sound is too short and sharp and the pause is frequently prolonged, although if there is hypertrophy also, as is not infrequent, the first sound may be prolonged or reduplicated. In many of such cases there has also no doubt been an excessive use of tobacco, occasionally of alcohol, and not infrequently they have been complicated by intermittent hard reading and late hours, all of which must have contributed to the breakdown. In fact, training by fits and starts, idleness and irregular habits between the periods of training, and the occasional hard reading which is compulsory on students who have to pass examinations are all factors in the production of this form of cardiac failure. The same condition is well known in soldiers as the "irritable heart," and I have seen it particularly well marked in some sailors. With rest, suitable tonics, and by observing due hygienic laws, the heart becomes quieter and the patient is able to do a fair amount of work and feels well, but a certain degree of dilatation nearly always persists and has to be taken into consideration when the line of life-work which has to be subsequently chosen is under consideration. The relation of the condition of the heart to renal dropsy has been brought into special prominence recently by a discussion on Dr. Dickinson's paper on Renal Dropsy, with especial reference to the Circulation, read before the Royal Medical and Chirurgical Society of London. It was maintained by Dr. Pye-Smith, Dr. Douglas Powell, and Sir W. Broadbent, and accepted by the writer of the paper, that the late dropsy in chronic renal disease was essentially cardiac and not really renal in origin, and that "the whole affair," as Sir W. Broadbent expressed it, was due to the "giving way of the left ventricle." Mere mechanical explanations of the phenomena of renal dropsy, whether early or late, are insufficient to account for its incidence and distribution, or its variable increase and decrease, and as yet, I think, we are without any hypothesis that covers the whole of its varied clinical characters.

Among the symptoms of cardiac failure I have not specially mentioned the pulse variations, and I have so far avoided doing so because they are far from characteristic. The pulse is always weak—that is to say, it is a low-tension pulse, and the blood stream is easily arrested on pressure ; but it may be abnormally

slow—thirty to forty per minute, or even less—or it may be rapid, irregular, or even intermittent. There is one absolute characteristic: it is never a pulse of high tension, whatever its rapidity may be. In most cases of arhythmia, tachycardia, and bradycardia which are not merely temporary we have either to deal with a neurosis or with a more or less pronounced dilatation, and the diagnosis becomes all-important. In cases of dilatation even of the acute form, coagulation of the blood in the cardiac cavities may rapidly take place, especially on the right side of the heart. As a result an embolus may be forced into the pulmonary artery or its smaller branches, and causing an immediate or rapid breath with urgent dyspnœic symptoms, although air freely enters the alveoli.

The treatment of cardiac failure may be summed up as follows:—(1) Physiological rest to the organ as complete as may be possible, and carried out in due relation to the severity of the symptoms; (2) general constitutional measures to improve the nutrition of the body in general; (3) special cardiac tonics to improve the work of the heart itself; and (4) the relief of symptoms in other organs—which are generally caused by a local congestion or stasis due to the impaired circulation. I shall only very briefly refer to a few of our chief remedial agents under these heads. Complete rest and quiet have a marked effect on a dilated heart, and the more marked the symptoms, the more striking are their results. I often prescribe no drug for a hospital patient with a dilated heart until he or she has been in the wards for ten days or even longer, unless urgent symptoms are present, and the benefit of the rest is often extraordinary. I am sure that much of the praise awarded to different drugs in the treatment of cardiac failure should be given to the rest which is coincident with their exhibition. Not only should we insist on ordinary rest, but we should carefully warn every such patient against hurry, outbursts of temper, worry, and many other things which seem to be mere trifles. Stooping to put on or take off boots, straining at stool, ascent of hills, and every physical exertion inducing strain, must be carefully guarded against. In severe cardiac palpitation and dyspnœa a hypodermic injection of morphia, from $\frac{1}{6}$ to $\frac{1}{4}$ gr. doses, administered by itself, or, better, with a desert- to a table-spoonful of brandy given just before or at the same time, gives marvellous relief, and is beneficial even in cases of true angina, although here the nitrites have frequently to be resorted to. The portability of the latter is a great advantage, for the onset of the angina is usually sudden. Spirit of ether in 15 to 30 minim doses or a few drops or an occasional whiff of chloroform are most valuable in dyspnœic attacks. The general measures include a generous diet, unless the digestive system is

impaired. From one pint to one and a half pints of milk can usually be well taken daily, either diluted with soda, magnesia, or lime or lithia water, boiled, or treated with digestive fluids. With this there should be a fair allowance of the more digestible meats and but little of vegetables or fruit. Too long intervals between the taking of food are especially to be deprecated. A little bitter ale or two glasses of good claret or burgundy may be taken daily at meals if divided between luncheon and dinner. The milk is best taken between the meals, and some should be taken on rising, perhaps flavoured with weak tea. In severe cases and in old people nourishment at night is imperative. The stomach should never be full and never empty. The general tonic medicines which seem to me to act most advantageously are arsenic, iron, and strychnine, and a pill in which these are combined may often be taken for months with great benefit. The special cardiac tonics should begin with the only really reliable one, digitalis, which may be added to the above pill or given separately or in combination with other drugs. Iron and digitalis form an everyday prescription. I rarely give more than ten minims of the tincture or one drachm and a half of the infusion three times daily ; but I give it for prolonged periods, as in these doses I have never seen any so-called "cumulative" action. Its especial value seems to me to be due to its slowing power over an irregular and rapidly beating heart so that more blood can accumulate in the cavities between each contraction, a firmer beat then takes place, and a larger amount of blood is expelled at each contraction, leading to a more regular and better filled arterial pulse and a more orderly and efficient circulation. I have never found digitalis to be of any value in cases of slow-beating heart (bradycardia), unless this is due to uncompensated aortic disease ; but it is our best drug when the heart is beating rapidly and irregularly, and the more marked these phenomena the more efficacious will be the result of administering the drug. Strophanthus occasionally acts well and may be used in those cases in which digitalis disagrees with the patient, but it cannot be relied on like digitalis. I have tried it in numerous cases of cardiac failure of every kind, but I have generally been disappointed. I have also tried convallaria majalis, adonis vernalis, and mercurialis annua, but without the slightest advantage, although recently these have been much vaunted as cardiac tonics. For the relief of the special symptoms, which are often most complained of by the patient and which distress the weakened heart, an adequate knowledge of the patient and his habits, as well as of the use of food and drugs, is required. In bad cases venæsection occasionally saves the patient's life when cardiac failure is due to engorgement of the lungs, as in emphysema, bronchitis, and cyanosis.

Palpitation is often due to gastric or intestinal trouble and aperients with stomachics then do much good. Nux vomica, ipecacuanha, aloin, and capsicum in pill, with a saline aperient, are often of use after effervescents, bismuth, and lime water have failed. Insomnia is best treated by food at night and by a slight stimulant of small doses of opium or morphia. Sulphonal or paraldehyde is occasionally very valuable, especially if renal or pulmonary complications are also present and forbid the use of morphia. Hæmoptysis, unless very great, will usually cease spontaneously; moreover we have no direct styptics, whilst it often is of value in relieving cardiac distension, and is best combated by external applications of cold. Ice externally applied and slight saline purgation are generally all that are required. If the urine sinks below the normal in quantity or is loaded with lithates and becomes albuminous (and it should always be examined for signs of concurrent Bright's disease) digitalis is the best remedy, and then it is often combined with squill and blue pill. Citrate of caffeine, citrate of lithia, iodide and bicarbonate of potassium, acetate of potassium and scoparium are our other most valuable diuretics, but hydragogues or puncturing the legs will often more efficiently relieve the renal stasis than any diuretics. At bedtime small quantities of hollands gin, spirits of juniper, or spirits of nitrous ether given as hot grog will often act as efficient diuretics and will also induce sleep.

For the dropsy hydragogue cathartics should be given, and I find a combination of ten grains of scammony, eighteen grains of bitartrate of potash, and two grains of ginger, preferable to the more commonly prescribed compound jalap powder. Sulphate of magnesium in half-ounce doses on alternate mornings is often well borne, or a corresponding dose of any of the natural purging waters may be given. Elaterium in doses of $\frac{1}{10}$ to $\frac{1}{12}$ of a grain is occasionally most valuable, but the quality of the drug and its action are both uncertain. If such remedies as digitalis, diuretics, and hydragogue cathartics fail to relieve the dropsy the legs should be punctured. I prefer to make two or three incisions in the neighbourhood of the ankle under proper antiseptic precautions to either the longer incisions occasionally made or the numerous punctures which must be made when Southey's tubes are inserted. If the incisions are properly attended to, and antiseptically washed and dressed by a nurse well trained in the use of antiseptics, there is very little risk of erysipelas or gangrene. The relief derived from the removal of the fluid in some cases can scarcely be over-estimated and it often considerably prolongs the life of the patient.—*The Lancet, January* 13, 1894, *p.* 79.

21.—HEART DISEASE IN CHILDREN.

By F. C. Coley, M.D., Senior Physician, Hospital for Sick Children, Newcastle-on-Tyne.

Etiology.—Without doubt many cases of heart disease in children are really rheumatic in origin, even where no history can be obtained of an attack of rheumatism of the joints. It is a clinical commonplace that rheumatism in children affects the heart more frequently than in adults, and that the joint affection is usually milder in children. But this is only a small part of the truth. Cases certainly do occur in which acute endocarditis or pericarditis may be the only local manifestation of an attack of acute rheumatism, there being no joint affection at all. It is admitted that this may occur in adults ; but it happens much more frequently in children. I may mention, as a typical instance of this form of disease, a little girl who was admitted into hospital under my care for chorea. The chorea followed a fright, and was of the ordinary type, moderate in severity. A systolic *bruit* at the apex was audible when the child was admitted. When the child was almost entirely recovered from the chorea, she suddenly developed a high degree of pyrexia, with severe cardiac distress. There was no joint affection. After a time the acute disease subsided, but it was evident that the heart was left in a worse condition than before. Here was a case of severe acute endocarditis, which, by its occurrence during convalescence from chorea, is stamped as almost certainly rheumatic. But suppose a milder case to occur, without the coincidence of chorea as a guide, it is very likely that the nature of the disease will be misunderstood, or even that it may be entirely overlooked, though quite severe enough to leave behind permanent injury in the valves of the heart. Children often appear tolerant of a considerable degree of pyrexia, so that in hospitals, where the temperature is regularly taken as a matter of routine, it is not at all uncommon to find that the thermometer reveals a feverish state of which the appearance and demeanour of the patient gave no hint. Even when *malaise* is sufficient to lead to the discovery of pyrexia, there may be little to draw attention to the heart as the seat of the disease, and no examination may be made ; and even if it is otherwise and some *bruit* is discovered, unless the practitioner has happened to have examined the heart shortly before the appearance of the acute disease, any morbid signs which are observed may not be recognised as recent ; they may be taken to be the result of some older mischief. In all probability many cases of rheumatic endocarditis without joint affection do not produce

sufficient obvious disturbance to bring them under medical treatment at all, although they may be quite sufficient to leave permanent injury to the valves.

Pericarditis is not quite so likely to escape notice, because it is more likely to be accompanied by local pain. I believe that these considerations give the key to the origin of many *bruits* in children where no history of rheumatism can be elicited by the closest inquiry. While I am on the subject of acute heart disease, I may mention that the so-called "malignant" or septic endocarditis sometimes occurs in children, and that even very severe examples of this grave disease may recover. A case which apparently belonged to this class was recently under my care in the Children's Hospital. A little girl, aged 12, who had suffered from the symptoms and presented the physical signs of phthisis for more than a year, showed also the evidence of mitral stenosis. This combination of conditions, so very rarely found associated, is in itself sufficient to make the case one of unusual interest But its after-history was still more remarkable. While the child was in the hospital under treatment for the phthisis her temperature rose rapidly and took on a septic type, with very wide excursions. At the same time there was very severe cardiac dyspnœa and distress, and *bruits* which varied greatly in character from time to time were heard. The spleen became enlarged and tender to pressure, and a hemorrhage took place from the bowel which was very nearly fatal. After about five weeks the acute febrile disturbance gradually subsided. The child left the hospital with her heart apparently in no worse condition than before the acute attack. She has since presented herself occasionally amongst my out-patients, complaining more of her phthisis than of symptoms referable to the heart.

Although rheumatic endocarditis occurring without any accompanying affection of the joints may serve to explain many cases of heart disease arising in children which might otherwise be obscure, we must not conclude that this key will fit every lock. One of my recent cases has appeared to me to present unusual interest, just because it furnished a puzzle the solution of which seems well nigh impossible. A boy, about ten years of age, was under treatment in the hospital for severe bronchitis. He had recovered from this, and was for some time allowed to get up. I was about to discharge him one day, but just for routine's sake I examined him before doing so. To my astonishment I found a loud systolic *bruit*, audible over the whole precordial region and at the angle of the scapula. To suppose that this *bruit* had existed before, but had been overlooked both by the resident medical officer and myself, would only be admissible on the understanding that we had both been stone deaf.

Under no other circumstances could we have failed to detect in our numerous examinations a *bruit* so widely diffused and so loud. Any attack of acute endocarditis, such as I have described above, was entirely excluded by the ascertained absence of pyrexia; for it is the custom in our hospital to have the temperatures of all patients recorded every night and morning. I sent the child back to bed, and kept him at rest under treatment with digitalis and iron for several weeks. But the *bruit* did not alter, except that it was sometimes audible at the angle of the scapula, and sometimes not so. It would, of course, be more satisfactory if a clear account could be given of the etiology of the heart lesion in this patient. But the case is worth recording if only to show that a mitral regurgitation (promising to be permanent) may arise under circumstances apparently excluding the ordinarily recognised causes of heart disease.

After History.—The extreme frequency of signs of mitral regurgitation in children, so greatly in excess of what is observed in adults, suggests the necessity of an explanation of the discrepancy. No doubt the severer cases die early; but these are quite the exception, and the number of deaths from heart disease in children is quite insufficient to furnish the solution of the problem. Although we may admit that children having valvular defects (even though not presenting obvious heart symptoms) are likely to resist the attacks of other diseases less successfully than children who are not handicapped in the same way, yet even this would give a very insufficient account of the matter. I think the only explanation at all adequate is that in a very large proportion of cases the mitral incompetence observed in children disappears in later life. I wish it were possible to furnish statistics in support of this proposition. But that is obviously impossible. In the nature of things these mild and favourable cases are just the ones that disappear from our observation the soonest. Physicians to children's hospitals necessarily lose the opportunity of seeing them again in later life. Hence the difficulty of bringing to statistical proof the fact of which I am nevertheless strongly convinced, namely, that mitral regurgitation in children is a condition which is very frequently recovered from.

Now, it is probable that structural alteration of a valve, following endocarditis, may be more readily recovered from in childhood than in later life. But there is another condition equally capable of producing the phenomena observed, and much more readily recoverable—I mean regurgitation through the mitral valve produced by dilatation of the left ventricle. I believe that far less prominence has been given to this condition than it deserves in ordinary clinical teaching.

Regurgitation through the tricuspid, arising in a similar manner, is a clinical commonplace. But when distinct evidence of mitral regurgitation is discovered, valvular lesion from old (or recent) endocarditis is usually assumed as the almost necessary corollary. Many authorities certainly speak of mitral incompetence following dilatation, but in ordinary clinical teaching the fact of its frequent occurrence is left in the background. I have shown elsewhere that it takes place in chlorosis much more commonly than is generally supposed. In 400 cases of chlorosis under my own care I found complete evidence of mitral regurgitation (a systolic *bruit* audible at the angle of the scapula, as well as at the apex) in 123. In many of these the graver physical signs were known to have appeared during the time that the chlorosis was getting worse from neglect of treatment; and in a still larger number they entirely disappeared when the anæmia was removed by the administration of iron. It was therefore evident that the mitral incompetence was due to dilatation, and not to any structural change in the valve itself. I cannot doubt that dilatation of the left ventricle plays a very important part in the production of these common mitral *bruits* in children. I am convinced that the small vegetations commonly observed on the edges of the valves in chorea do not explain the bruit which is so frequently heard in the course of that disease, and which is comparatively seldom permanent. For although such vegetations are rarely absent when a post-mortem examination is made after chorea, we must recollect that it is only in cases of altogether exceptional severity that death occurs. So that it is rather an unwarrantable assumption that endocarditis is a frequent accompaniment of the ordinary mild type of the disease which recovers. But there is a much stronger reason for doubting the casual relation of these tiny vegetations to the *bruits* in question. It is not at all likely that such vegetations would interfere with the closure of the valve. And, therefore, they would not produce a systolic *bruit*; if they produced any *bruit* at all it would be presystolic. But the bruit in chorea is usually, if not always, systolic. Probably these minute vegetations, when they do develop, have nothing to do with the ordinary transient *bruit* of chorea. I think that ventricular dilatation is a more satisfactory explanation than irregular—choreic—action of the musculi papillares. I once observed, in a girl, aged 11, who had suffered from chorea, a *bruit* audible at the pulmonary area only, the first sound at the appendix being normal. The *bruit* disappeared under treatment. In another patient, whose age was 24 when I examined her, and who had suffered from chorea following a fright when she was about ten years old, I found a *bruit* presystolic and systolic at the apex, and systolic at the angle of

the scapula. Here I should be disposed to attribute the damaged condition of the mitral valve to an attack of endocarditis such as I have above described, although I obtained no history pointing in that direction. This seems rather more probable than to lay the blame of such extensive damage to the chorea directly.

It should never be forgotten that, when signs of mitral regurgitation occur in the course of acute rheumatism, this is not necessarily due to endocarditis and its consequences. In a large number of instances a temporary dilatation of the left ventricle offers the more reasonable explanation. This suggests that all such cases should be treated by prolonged rest, with heart tonics, including iron. Even where actual valvular deformity exists, prolonged rest gives perhaps some chance of complete recovery, and certainly affords the best opportunity for the establishment of satisfactory compensation.—*British Medical Journal, November* 25, 1893, *p.* 1146.

22.—ON ACUTE CARDITIS IN CHILDREN.

By Octavious Sturges, M.D., F.R.C.P., Senior Physician to the Hospital for Sick Children, Great Ormond Street.

In the course of a slight rheumatic attack or, it may be, following it with an interval of apparent convalescence, active carditis is suddenly announced by restlessness, increased pallor, and a curious aspect of anxiety, together with dyspnœa, delirium, and sometimes obstinate vomiting. Such symptoms suddenly transform a trivial illness into one of extreme gravity. Often there is heart pain ; and tenderness over the heart region is a common and important symptom. There may be little rise of temperature and not much quickening of breathing or of pulse, but the act of respiration is distressing and is accompanied by the short expiratory grunt so characteristic in the acute chest affections of young children. Together with these symptoms there is a preference for the raised position and some children, with great distress in breathing, will lean forwards in search of relief.

The posture, the pallor, the restlessness, and look of alarm, coupled with the dyspnœa, due mainly to enfeebled inspiratory effort, all these are symptoms so characteristic that active carditis in a child may be detected almost at sight. Certainly when the chest is bared and both eye and hand take part in the observation the character of the heart's impulse will remove any doubt that may remain. And when these symptoms rapidly progress to a fatal end, as they often do, it is sometimes prostration, sometimes delirium, sometimes persistent vomiting, that

shows the most conspicuously; but the main source of the symptoms, however these may arrange themselves, is manifestly cardiac failure—failure which is often so sudden that it is not possible to attribute it to texture degeneration. It is this acute form of carditis alone that threatens death as an immediate result. We are wont to regard all forms of carditis—whether active, passive, or chronic—as having a common origin in rheumatism. Without impugning the correctness of this belief it must be insisted that premonitory symptoms are by no means confined to the joints. They are, in fact, so various, that it is difficult to name any one of them that is invariable or common to the whole series. Sometimes, for example, it is not articular but limb pain that accompanies or precedes the heart inflammation. Sometimes it is dyspnœa or cardiac pain. Sometimes in the recurrence of an attack, which at the first was articular and obviously rheumatic, the old pyrexia will reappear, but in the fresh attack the heart will be actively concerned while the joints escape altogether. In no small proportion of cases wasting and sweating are the main premonitory symptoms, and the history of antecedent rheumatism will be extemely vague. Even in those instances—the majority, no doubt—where the rheumatic nature of the affection is beyond question it is noticeable in children how soon joint pains recede and the condition of the heart occupies the whole attention, whether from the changeful character of its physical signs or else owing to the sudden appearance of those urgent symptoms of heart failure of which I have spoken.

The mortality of these patients is considerable. I cannot state it precisely, for in cases collected with a view to showing characteristic symptoms the death-rate is likely to be higher than when the object of the collection is to illustrate the good results of treatment. A single example will serve to bring before you the special characters of this active and perilous form of carditis in childhood, a form so rarely observed in after life.

A girl aged seven years and ten months, anæmic and ill nourished, was admitted to the Hospital for Sick Children, Great Ormond Street, on April 28th, with a history of six weeks' pains in the limbs, and for the previous three days swollen and painful joints. These symptoms had attracted but little notice in the family until twelve days before admission, when the child complained of pain at the heart, was seen to be short of breath, and had to be propped up in bed. The girl had never had rheumatism before, and was not of a rheumatic family. On admission the respiration was 36, the pulse was 120, regular both in force and frequency, and the temperature was 99° F. There was marked pulsation in the vessels of the neck, but no venous enlargement elsewhere. The area of cardiac

dulness was not increased. A systolic thrill could be felt at the apex, and a loud blowing systolic murmur heard at the same place and conducted round to the back. Inside the nipple and a little above it the second sound was inconstantly reduplicated.

For the following three or four days no particular change occurred. The child soon ceased to have pain, the area of heart dulness did not alter, nor did the heart sounds. The child was quiet and restful, but lethargic. Anæmia was more extreme. On the fourteenth day of residence, however, a marked change occurred. It began with an attack of nose bleeding, followed by a sleepless night. The child complained of headache. The temperature rose to 102°, although there was no return whatever of joint pain. The heart was tumultuous in action and its impulse was forcible and diffuse, the apex being apparently in the fifth space ; the murmur was now of harsher pitch, so-called "musical" in character, and was audible a finger's breadth outside the nipple line, where it abruptly ceased. Within the nipple a very slight diastolic sound was heard, the commencement, as it seemed, of friction, which was afterwards distinct. The urine was now found to contain a trace of albumen and some blood. Hereupon (we have now reached the thirty-first day from the first heart pains and dyspnœa) the most characteristic signs of active carditis appeared—that is to say, the child, though free from actual pain and without marked dyspnœa, was anxious and restless, the little sleep she got being disturbed by muttering and painful visions. A friction sound (to and fro) was now audible, its maximus intensity being at the ensiform cartilage, but it was distinctly heard as high as the second costal cartilage. The pulse (140) was still regular, and the temperature was from 100° to 101°. The area of cardiac dulness now for the first time began to enlarge, transgressing the left border of the sternum to the right, and a finger's breadth outside the left nipple to the left, the upper limit reaching the third space. It continued to enlarge somewhat for a while, as shown in the figure, but presently receded and at death was hardly larger than on admission.

Without staying to record daily changes—such as the distinctive friction rub and thrill, the varying character of the apex murmur, the heart's action now more, now less forcible and excited, while the veins of the neck began to show marked reflux, the patient being restless, free from pain, but tender on percussion over the cardiac area—we come to May 31st, the forty-second day from the first heart symptoms and within five days of death. It was on this day that vomiting set in, and it persisted. The area of cardiac dulness rapidly decreased, and the rub was but indistinctly heard. There were increased restlessness, difficult, groaning, yet not very rapid breathing,

intense anæmia, constant sickness, pericardial effusion rapidly diminishing the while. The regurgitation in the neck veins increased, and now for the first time (a few days before death) œdema of the legs and signs of pulmonary œdema were noticed.

So the story closes on June 5th. At the latest stage there was considerable engorgement of the lungs, perhaps accelerating death a little. The whole duration of the carditis was forty-seven days. The more acute symptoms occupied thirty days, and the most urgent symptoms (constant vomiting being the most prominent, pericardial effusion disappearing the while) lasted for less than a week. Of the post-mortem examination it will suffice to say that the heart weighed nine and a half ounces, showing both dilatation and hypertrophy, the latter as regards the right auricle and ventricle. The mitral valve admitted three fingers, and at its extreme edge there were some minute granulations. The other valves were normal. The pericardium was universally adherent anteriorly and posteriorly. No fluid remained and the surfaces were separated with difficulty.

Time will not admit of separate mention, even in this brief outline, of other examples of a similar kind. They have a strong family likeness, but the end does not come always in the same way in the fatal cases. In a certain number, of which I have had two well-marked cases within the last year—one fatal and one recovering—typhoid prostration is the main feature, the patient lying apathetic and but partially conscious. In the child aged nine years who recovered this prostration was so extreme that some days the motions were passed into the bed. Within the last three years I can recall sixteen examples of active carditis of this pattern, all patients of my own. Six were boys and ten were girls ; four only recovered. As many as eight, half the number, were under seven years of age. The four oldest were between ten and eleven. The pericardium was adherent in all the fatal cases, and in only one was there extensive valve disease. In most, the endocardial change was limited to small granulations on the mitral valve. It is not easy to summarise the several symptoms. It may suffice to say that in one case alone were joint pains prominent and long-continued. In one patient pain affected the limbs, but not the joints ; in two, slight rheumatic pains were suddenly replaced by prostration, the while the physical signs indicated pericarditis. Of the physical signs of rheumatic carditis in children, whether active or passive, the pericardial are the more obvious and the more immediately important. The concurrent endocarditis (whose presence may be assumed), difficult enough to appreciate in any case at an early stage, is more or less masked by the presence of exocardial signs.—*The Lumleian Lectures*, *The Lancet*, *March* 10, 1894, *p.* 584.

DISEASES OF THE ORGANS OF RESPIRATION.

23.—ON THE PYREXIA OF CHRONIC PULMONARY TUBERCULOSIS.

By J. Kingston Fowler, M.D., F.R.C.P., Physician to the Middlesex Hospital.

The daily temperature curve obtained in tuberculous disease is characterised chiefly by pyrexia commencing in the afternoon, and gradually increasing until 8 or 10 p.m., by which time it attains its maximum. From that point a continuous fall occurs until the early morning, when the thermometer may register one, two, or even three degrees below the normal.

This type of pyrexia is not confined to tuberculous disease, although it certainly occurs therein with especial frequency, and its presence often first indicates the real nature of a doubtful case.

I do not think that any satisfactory explanation of it has ever been given, although when occurring in a case of pulmonary tuberculosis with rapid disintegration of the lung, it is generally ascribed to septic absorption. But it may be observed in its most typical form in cases of tuberculous pleurisy or peritonitis, quite apart from any evidence of septic infection. It is possible the expression of an attempt on the part of the organism to deal with and destroy the product of the bacillus tuberculosis, or it may be a direct effect on the heat-regulating centres of the absorption of the toxic material.

The pyrexia is most marked when the disease is making rapid progress in an organism still capable of reaction. This latter condition is essential, as in cases characterised by considerable failure of vital power, continuous extension of the disease, leading up to a fatal termination, is not uncommonly observed in association with an absence of pyrexia ; but a very limited clinical experience should be sufficient to prevent one from regarding a low temperature under such circumstances as of favourable import.

The period of the disease when the physical signs indicate the presence of infiltration, limited to one apex or probably also involving the apex of the lower lobe of the same lung, is, generally speaking, marked by an absence of fever, the evening temperature being often between 98 degs. and 99 degs. F. for long periods ; but as a rule the early morning temperature is slightly below normal, so that the tuberculous type of temperature is maintained even in the absence of fever. Whether the

changes in the lung which immediately follow infection are accompanied by fever is doubtful. I am disposed to believe that the onset is very often without pyrexia. However this may be, it is certainly true that during the stage of early infiltration apyrexia is very common, and is in my experience the rule rather than the exception. A sudden increase in the area of lung affected, or an accession of activity of the morbid process without definite signs of extension, is almost invariably marked by the occurrence or increase of pyrexia.

As infiltration progresses and foci of softening make their appearance about the apex or elsewhere, the tuberculous type of curve is maintained, but the evening rise is still moderate 100·5 degs. F. or 101 degs. F.), and the morning fall is distinctly marked.

It is often observed that with the formation of a well-defined cavity the pyrexia either subsides or disappears altogether. Such an event almost invariably marks the onset of a period of quiescence or complete arrest of the morbid process.

At a later period of the disease, when perhaps a vomica exists in both upper lobes and softening is in progress in the lower lobes, it is not uncommon to see a chart characterised by a very marked evening rise to 103 degs. or 104 degs., and a morning fall to 96 degs. F., or it may even be some degrees lower. As the end approaches, a sudden outbreak of miliary tuberculosis may occur, and is indicated by an increase in pyrexia, which now becomes continuous ; but in some cases from failure of vital power and reactive orce the pyrexia may diminish at this period. Such are the temperature curves most commonly observed during the progress of an ordinary case of chronic pulmonary tuberculosis. It is scarcely necessary to state that between such periods of pyrexia there may be long intervals marked by absence of fever, during which there is either partial or complete arrest of the morbid process.

The remarkable regularity of the evening rise and morning fall is liable to be disturbed by a number of mischances, some one of which is almost sure to happen sooner or later in any given case. For example, when a sudden increase in the evening fever is associated with a less marked morning remission, when on successive days the lowest point touched gradually recedes from the base line, and regularity is replaced by marked variability we are rarely wrong in concluding that an extension of the morbid process has occurred. This may take the form of a rather rapid consolidation in the neighbourhood of the area of active change, but is more often due to an outbreak of miliary tubercle in parts of the lung hitherto unaffected. Such a change is often observed on the post-mortem table, and must have occurred shortly before death. It is

probably the result of a direct infection of the blood stream in the lungs by a softening tubercle in the vessel wall.

The occurrence of hæmoptysis, pneumothorax, catarrh, pleurisy, severe diarrhœa, and other complications, all have an effect in disturbing the normal regularity of the temperature curve.—*Practitioner*, *October*, 1893, *p.* 259.

DISEASES OF THE ORGANS OF DIGESTION.

24.—ON THE TREATMENT OF THE COMMON FORM OF DYSPEPSIA IN WOMEN.

By Robert Saundby, M.D., F.R.C.P., Physician to the Birmingham General Hospital.

Exhaustion from overtaxing the physical and mental powers or from other causes, being the basis of these troubles, we have no difficulty in naming the essential remedy, which is rest—rest in bed. It is a very simple means, so simple that it is frequently not acceptable to an active-minded woman who always wants to be doing something, and who feels disgusted with advice which is the very opposite of what she desires. But this must not deter us from insisting firmly on this as the foundation for all other treatment. Drugs may and do alleviate the symptoms in the earlier stages of the disease, but the patient does not get well, the mischief goes on, and in course of time more serious troubles develop, which are more difficult to cure. The duration of the period of rest must necessarily depend upon the intensity and duration of the symptoms. Such virtue is there in prolonged sleep and rest that even thirty-six hours in bed will do much in the early stage of this neurosis, but when our advice is sought it is usually for a condition of things which demands at least a week, and commonly two or three weeks' rest. The rule is to keep the patient in bed until she has eaten ordinary diet without any discomfort for at least three or four days.

Massage.—Should there be great loss of flesh, as is the case where the symptoms have existed for some time and the amount of food taken has been inadequate to the demands of the body, seven or eight weeks may be usefully spent in bed after full diet can be taken, but under these circumstances massage and faradaism should be employed daily to aid the nutrition of the tissues and restore tone to the muscles.

Isolation.—In some patients the treatment of the case is complicated by the presence of hysteria, by which I mean a morbid mental condition, the product of excessive sympathy from injudicious relatives, which substitutes for the normal desire to get well an unnatural craving to excite sympathy and receive attention. When this exists it is absolutely necessary to isolate the patient if the treatment is to succeed.

Climate.—When the patient is well enough to go out it is very desirable to complete the cure by change of air and scene, by which she will avoid returning to her ordinary duties, with their often unavoidable worries, and still further strengthen her mind and body. In the winter our choice of place is limited, and circumstances may impose upon us further restrictions. But the south coast watering-places are generally suitable: if the weather is mild, those at the eastern end ; if the weather is cold, the Isle of Wight or the more westerly resorts in Dorsetshire, Devonshire, or Cornwall. More wealthy patients may be sent to the Riviera, Cannes being especially suitable. I have found Weston-super-Mare suit these cases exceedingly well in the spring. In the summer the seaside is generally too enervating for them, though the bracing air of Rhyl benefits many poor women in the excellent convalescent institutions which exist there for their great advantage; but higher altitudes are better adapted to restore lost vigour, and of such stations there is none better than Braemar (1,200 feet), in Scotland, and none more accessible than Buxton (1,100 feet).

Diet in gastralgia.—Subject to the considerations and limitations of what we may fairly call ordinary healthy diet, after suitable repose has restored a healthy tone to the stomach, these patients when uncomplicated by organic disease, may eat, and should be encouraged to eat, anything. Positive harm is done by dieting them ; it tends to make them hypochondriacal and fanciful about this or that article of food not suiting them ; moreover, they are often disposed to eat too little, and the necessity for at least three good meals a day should be impressed on them. If a little weak alcohol helps the appetite they should take it, but on general principles spirits should not be recommended. Light wine or light beer, or even stout, may be really beneficial, the last especially, from the large amount of dextrines and sugar it contains.

In atony and dilatation.—When there is a distinct motor defect, fats should be taken very sparingly or not at all, and some care must be exercised to avoid the use of indigestible food, such as uncooked fruit and vegetables, pork and veal, cheese, pickles and pastry. The object in view is to secure a chyme which shall be formed as quickly as possible, and pass the pylorus easily, and the extent to which diet must be modified

to effect this must depend upon the degree of dilatation present.

But marked dilatation is always associated with more or less gastritis, which leads us to those cases in which inflammatory complications have to be considered.

In sub-acute and chronic gastritis we are guided by the same principle, with this additional rule for the more acute cases, that abstinence from food or from all but the simplest nourishment for a limited period is strongly indicated. When the stomach is irritated or inflamed we must carefully exclude all food which comes under the following headings: (1) pungent and acrid substances; (2) chemical irritants; (3) mechanical irritants; and (4) fermentable substances. Under the first heading are included condiments—such as pepper of all kinds, mustard, spices, and alcohol, especially ardent spirits. It is to be regretted that patients so often tell us that they have been recommended to drink spirits *because* they are suffering from dyspepsia. It should be better understood that gastritis in any degree contra-indicates the use of spirits. Under the second heading are all strong acids, such as tannic acid in tea, and acetic acid in beer. Under the third heading of mechanical irritants are the insoluble indigestible foods, fat meats, pork, oily fish, salmon, mackerel and eels, veal, mushrooms, cheese, pastry, fried articles, uncooked fruit and vegetables, seeds, husks and skins. This rule excludes all bread but the finest white bread, and this should be well toasted, so as to ensure complete rupture of its starch capsules. No brown bread or whole-meal bread should be allowed. Lastly, we have such fermentable substances as sugar, farinaceous food and fat. We should forbid all sweets, all fats, but a very small allowance of butter, and all farinaceous food except toast and light vegetables. This dietary is not so restricted as it may appear to be; for example, it permits for breakfast—milk, tea, *cafe au lait*, cocoa, toast, a little butter, white fish, fowl, game, beef and mutton (boiled, roast, or broiled), hot or cold, eggs lightly cooked, and potted meats unspiced. For luncheon—white fish, fowl, game, beef and mutton (boiled, roast, or broiled); mashed potato, cauliflower, broccoli, vegetable marrow, early peas; custard pudding, jelly, isinglass, blanc-mange unsweetened or with little sugar; claret or hock with aerated mineral water. For tea—milk tea, toast, German rusks. For dinner—no soup; any fish but salmon, mackerel, and eels; beef or mutton; sweetbreads, calves' head or feet, cowheel, tripe; all light vegetables; fowl or game; well-stewed fruit free from stones, skins, or fibres; custard, jelly; toast or rusk; cream cheese; claret or hock with aerated mineral water. All uncooked food and all that is acrid, pungent, sour, sweet, and greasy should be carefully avoided. In the treatment of a case of sub-acute gastritis which will only

require care for two or three days it is better to tell your patient exactly what to eat; but where the disease is more chronic it is better to tell her what things to avoid.

Exercise.—The muscular system depends for its health on regular exercise, and this process not only keeps the muscles in tone, but promotes the circulation and respiration and the glandular functions of the body. It is probable that large muscles demand more active exertion than small ones, and that spare bodies are benefited as much by rest as fat ones are by exercise. The importance of rest in these cases has already been explained, and where exercise is productive of fatigue it must be discouraged, or at least restricted to limits within which the patient will not feel tired. Exercise should be taken early in the day, and may with advantage be avoided later.

Electricity.—In atony and dilatation of the stomach we may apply either current to stimulate the action of the muscular wall and to restore its tone. This may be done through the abdominal wall by applying large, well-wetted, flat electrodes over the region of the stomach, but much more certainly by means of Max Einhorn's stomach electrode. The stomach is filled moderately with water and the electrode introduced in the same fashion as a stomach-tube, while a large, flat electrode is applied to the epigastrium. We can then connect them with either current, but our plan has been to use four or five cells of a constant current, which is interrupted every five or ten seconds. In the early stages this treatment obviously has a much better chance of success than in the more advanced cases, in which we have generally used it. It is not difficult of application, but its value is still in doubt.

Stomach-tube.—The modern soft stomach-tube is an instrument which serves the double purpose of filling and emptying the stomach. In some cases of anorexia, complicated by hysteria, it is often necessary to threaten to feed by the tube, but very rarely have we had to carry out the threat. It may be used to wash out the stomach when there is reason to believe that there is retention of stomach contents, and its use becomes imperative when there is decided dilatation. To a considerable extent we may get the same results from emetics as from the tube, and with less alarm to the patient, for although they soon get used to the instrument and pass it readily for themselves it is always distressing at first. Therefore in cases of recent trouble, where the stomach would probably need to be washed out once only, I prefer, rather than the tube, an emetic of zinc sulphate, given together with plenty of warm water. There is reason to believe that this instrument is used too little in this country and too much in Germany. The best antiseptic for washing out the stomach is a 1 per cent. solution of salicylate of soda.

Drugs.—Iron: On account of the prevalence of anæmia in these cases iron takes a very prominent place in their treatment Where this symptom is marked we may give pil. ferri (Blaud's pill), sulphate of iron in mixture, so often usefully combined with sulphate of magnesia, or the tincture of the perchloride of iron Strychnine: This drug is extremely useful in combating the motor weakness of the stomach and intestine, and may be suitably combined with iron, or in those cases where iron is not indicated, with a mineral acid, of which hydrochloric acid seems the most appropriate. A mixture in which these two drugs formed the essential elements is very beneficial to the ordinary type of atonic gastralgia. Magnesium and sodium sulphates: These admirable aperients deserve early mention among the drugs which stand first in usefulness and in the frequency with which they are required. Constipation is the absolute rule in these cases, and of all aperients the salines are the best. When the patient is in bed the dose may be divided and given three times a day, but when she can get about it is better to give it the first thing in the morning on rising from bed. I think there is little to choose between the magnesium and sodium salt, except in their taste, of which probably to most people the former is most disagreeable. Either may be given in the shape of mineral water, of which Franz-Josef, Æsculap, Friedrichshall, and Hunyadi, are among the best known magnesium waters, and Carlsbad, Kissingen, and Rubinat the sodium waters. The last is, in my experience, one of the least disagreeable and most efficient. Where there is gastritis these salts or waters should always be taken in half a pint of water as hot as it can be sipped. Mercury: Abernethy said he would define biliousness as a condition curable by blue pill, and there should be no doubt of the value of this remedy in all cases of sub-acute gastritis. The drug may be given in the form of calomel or blue pill. I prefer the latter, and I generally give two five-grain pills, one to be taken at bed-time on successive or alternate nights according to the extent of its action. It unquestionably has the power of allaying gastritis, and in small continued doses is useful in the chronic form as well. How it acts—whether as an antiseptic or by unloading the vessels, or by both means combined—we cannot be sure, but its power in both these directions is undisputable, and no one will question the good results which follow its administration. Bismuth: In the treatment of gastritis, whenever there is evidence of much irritation by pain, furred tongue, icterus, or mucous vomiting, &c., bismuth is indicated. Hydrochloric acid: We have seen that not very uncommonly there is distinct deficiency in the hydrochloric acid of the gastric juice; it is difficult to give as much as is needed to compensate for defective secretion, but fifteen drops in a wineglassful of water

may be taken through a tube every hour for four hours after each meal. Pepsin: Pepsin is much more rarely absent, as so little of the ferment is actually necessary, but when artificial digestion has determined the want of it, it may be very easily supplied by any of the good preparations now in the market. In connection with the use of these remedies it may be said that they do not do so much good as might be expected, nor does their absence produce the ill-effects we should anticipate; in fact, so long as the food is not retained too long in the stomach its chemical condition is of comparatively little importance, the deficient digestion in the stomach being made up by the activity of the pancreatic and intestinal juices.—*The Lancet, March* 24, 1894, *p.* 727.

25.—ON THE DIAGNOSIS OF THE TUMOUR CAUSED BY DILATED STOMACH.

By William Osler, M.D., Professor of Medicine in Johns Hopkins University.

After remarking that in ten cases out of thirteen the diagnosis was made by inspection alone, Dr. Osler says:—A dilated stomach may occupy every region of the abdomen except the upper part of the epigastric, and may form a very prominent tumour.

The most prominent distension is usually in the left half of the umbilical region, but it may be chiefly below the navel. A definite stomach contour may be seen very plainly in many instances of dilatation from stenosis of the pylorus. At intervals, during the contraction of the stomach walls, the outline of the greater curvature descends on the left side, curving at a level of the anterior superior spine, and passing to the right at a variable distance above the pubes, sometimes not more than three or four centimetres, sometimes midway between the pubes and the navel. Curving upward, it ends either in the left lumbar or more frequently in the right upper quadrant of the umbilical region, sometimes appearing to pass beneath the right costal margin. The lesser curve is frequently much more distinct, the line passing vertically parallel with the left border of the sternum or in the parasternal line, curving to the left of the navel, and often during the contraction of the organ forming a very well marked, sharply defined contour at or a little below the level of the navel. I have found the greatest surprise expressed by practitioners that the stomach should be so low, that even the lesser curvature should be below the level

of the navel ; but this is frequently the case in extreme dilatation. In the first place, then, the outline of the organ may give at a glance the diagnosis. Secondly, inspection is of the greatest value in determining the presence of peristalsis. Though enormously stretched, there is hypertrophy of the muscular coats and great increase in the activity and frequency of the movements. The movements are of two kinds, which may be seen together or separately : First, peristaltic waves, passing slowly from left to right, more rarely antiperistalsis, from right to left. The mere exposure of the abdomen to the cool air is usually sufficient to excite them. Sometimes the stimulus of palpation is required, or the flapping of the skin with a wet towel. During the passing of these waves the outline of the organ becomes evident : sometimes, as already noted, the greater and lesser curvatures are plainly to be seen. Sometimes, too, as the waves reach the pyloric region a tumour mass may be rendered visible or made more prominent. The stomach may be so enormously dilated that the walls are in a condition of paralytic distention and no peristaltic waves are seen.

A second variety of movement to be seen in a dilated stomach consists in a slowly-performed irregular protrusion here and there of the stomach wall, which lifts the skin of the abdomen in a hemispherical boss or prominence. This may develop at any point, more frequently toward the greater curvature. They usually occur with the peristaltic waves, and in combination may throw out in bold relief the contour of the organ, sometimes also giving to it a somewhat hour-glass shape, owing to corresponding depressions about the middle of the greater and of the lesser curvatures. These irregular protrusions may be seen in enormously dilated stomachs, in which the peristaltic waves are no longer visible.

Palpation.—Four points may be determined by this procedure. The existence of the splashing sound or succussion, the *clapotage*, which is always present, and which, though in no way diagnostic, yet is of value in connection with a prominence in the left flank and lower umbilical region. It is of use also in determining the lowest level of the organ. With the hand on the abdomen, as the peristaltic waves pass, or as the irregular protrusions develop, you will notice that the organ hardens ; and toward the pylorus, as the wave is followed, there may be an exceedingly firm contraction. After persisting for a minute or so the muscular walls relax and are again soft and readily depressed. In some instances the muscular contraction at the pylorus is extremely firm and hard, and the relaxation beneath the hand reminds one of that of the uterus. A third point of importance, particularly in palpation of the pyloric region, is

the gurgling of gas through the pyloric orifice. This is usually very marked when the stomach is inflated, but it may occur spontaneously and in some instances at regular intervals. In doubtful tumours of this region this is a sign to which scarcely sufficient attention has been paid. And lastly, it is by palpation chiefly that we are enabled to determine the presence or absence of a pyloric tumour. And here you have to bear in mind that in dilatation of the stomach the pyloric tumour may be extremely variable, readily felt to-day, scarcely palpable to-morrow, dependent very much upon the grade of distention. You will find this very strikingly illustrated after washing out the stomach, when perhaps a comparatively small pyloric mass may be found to be quite large and prominent. When the organ is extremely dilated, the tumour may be scarcely palpable.

Percussion combined with palpation brings out most clearly the splashing sound, which in cases of extreme dilatation may be most evident below the transverse navel line. The extent of stomach tympany will vary with the position of the patient. In the recumbent posture it may extend in the nipple line from the fifth costal cartilage to within two or three fingers' breadth of the pubes. In the erect posture a line of transverse dulness may be accurately defined, which will sink as the patient is gradually placed in the recumbent position. The extent of stomach tympany varies, of course, with the amount of fluid contents, and after the attacks of vomiting, in which large quantities of liquid are brought up it may be very much extended.

In doubtful cases inflation of the organ is a most valuable method, and is best accomplished by the use of the bicarbonate of sodium and tartaric acid, from half a teaspoonful to a teaspoonful dissolved separately and taken one after the other, the patient being directed to refrain, as far as possible, from belching. Inspection may, through thin abdominal walls, at once reveal the distended stomach, displaying active peristaltic movements. The percussion limits can then be also more definitely defined. Palpation in the pyloric region may give the sensation of gas bubbling through into the duodenum. This method of inflation is more satisfactory on the whole than that of pumping air into the stomach. When gastric ulcer is suspected these proceedings should be practised with great caution or omitted altogether.

The characters of the contents of the dilated stomach, the general symptoms, and special features I shall not discuss, as the subject before us is more particularly the form of abdominal tumour caused by it. To one special point, however, I may refer, as it is of some moment in the treatment of these cases

of dilatation from stenosis of the pylorus. The recent experiments of Von Mering show that water is not absorbed to any extent from the stomach, but is passed into the intestine, usually at regular intervals, by a rhythmical opening and closing of the pylorus. Not only is the resorption of water extremely slight, but hand in hand with the absorption of the sugars and peptones there is actually a secretion of water corresponding in some measure to the amount of substances absorbed. With these facts correspond closely certain points in the history of dilatation of the stomach. The organ is never empty, and even after it is pumped out as much as possible, fluid will reaccumulate without any liquid having been taken; and frequently patients will remark in astonishment that the amount which they have vomited far exceeds in quantity what has been taken by the mouth. This explains also other striking symptoms in excessive dilatation of the stomach, namely, the great reduction in the amount of urine secreted, the dryness of the skin, and the wasting, which is proportionate to the degree and persistency of the dilatation rather than to the nature of the obstruction. Unverricht has suggested to supplement this water depletion by the use of large enemata, two litres daily of salt solution, the use of which he states has been followed by marked improvement in the symptoms, and in some instances by an increase in weight.

And, lastly, there is the question, What conditions may be confounded with dilatation of the stomach? Nothing, in reality, if the examination is made systematically and thoroughly. The physical signs alone are generally sufficient, and, when taken in connection with the general symptoms, quite distinctive. Yet mistakes have arisen, some of a remarkable nature, owing to ignorance of the fact that the dilated organ may be chiefly to the left of and below the umbilicus. The tumour has been mistaken for an ovarian cyst, and even after tapping and the withdrawal of a dark-coloured fluid containing grains of rice, pieces of potato, bread, meat, &c., laparotomy was performed for ovarian tumour. The enormous dilatation, with paralytic distention and absence of the peristaltic waves, might, and indeed did, when the stomach was very full, simulate ascites, but no serious difficulty could arise in the differentiation. Tumours of the colon, causing obstruction, lead to great distention of the large bowel, in which active waves of peristalsis may be seen passing from right to left. Usually the abdomen is distended more uniformly or chiefly in the epigastric zone, and intestinal, not gastric, symptoms have been present, and the inflation of the stomach alone, or, if practicable, combined inflation of the stomach and colon, will usually give information upon which you may base a definite conclusion.

A dilated stomach, causing a prominent tumour of the abdomen, is almost invariably due to stenosis of the pylorus. In rare instances a prominent tumour may be caused by muscular insufficiency, as it is called, or atony of the stomach, and occasionally, by change in the position of the organ, the so-called *descensus ventriculi.* I may, however, remark that only in very exceptional instances of atony of the stomach or of descensus ventriculi are the peristaltic waves seen. In women who have borne many children, and who have the extremely relaxed abdominal walls, the condition which Glénard has termed enteroptosis may be associated with great depression and enlargement of the stomach.—*New York Medical Journal, February* 10, 1894, *p.* 162.

26.—JAUNDICE, DUE TO SIMPLE OBSTRUCTION, SUCCESSFULLY TREATED BY OLIVE OIL.

By Thomas Oliver, M.D., F.R.C.P., Physician to the Royal Infirmary, Newcastle-on-Tyne.

In this article I wish to remind the profession, without attempting to explain the *modus operandi*, of the beneficial results that follow the administration of large doses of olive oil in certain forms of obstructive jaundice, and, in particular, recurrent jaundice due to gall-stones. The subject having been on more than one occasion dealt with in the pages of the medical journals, I shall be brief, and give only the details of two cases in which this line of treatment has been followed by signal success.

A male patient, 78 years of age, whom I have seen on several occasions with Mr. T. A. Dodd of this city, and who was successfully operated upon five years ago by the late Prof. Heath for vesical calculus, became the subject of malaise in August, 1892. In two or three days this was succeeded by jaundice, which gradually deepened in tint, and was accompanied by all the symptoms—general and gastro-intestinal—met with in these cases. When I saw him five or six days later there were considerable debility, a slight rise of temperature, a rather rapid pulse, and short cough. On examination pleuro-pneumonia of the right base was found. The condition of the lungs confirmed the opinion that in all probability the illness was due to a "chill," and that the jaundice was catarrhal. Under the employment of alkalies, soda salicylate, nux vomica, and calomel, the jaundice gradually disappeared and the condition of the

chest improved. For several months afterwards, although there were no positive symptoms, and the patient meanwhile looked well, there was the complaint that he never felt quite well, and at that time perhaps there was a degree of physical inability for exertion and mental sluggishness that we did not sufficiently take into consideration. The bowels ceased to act regularly with the gentle aperient he was in the habit of taking, a mild diarrhœa with fetid stools alternated with constipation, and there was considerable flatulent distension of the abdomen. This flatulent condition of bowel on a few subsequent occasions rather misled us. In the early part of 1893 the patient, who had for several weeks been becoming heavy and listless, but in whom no other noticeable deviation from health was discernible, began to suffer from recurrent attacks of severe pain, sudden in their onset, deeply seated, and generally referred to the right of the epigastric region, and extending towards the umbilicus. Occasionally this pain was preceded by a slight feeling of shivering, and it would last for only a few minutes or an hour or two, being somewhat controlled by hot drinks, carminatives, and poulticing. Narcotics were not given on account of a peculiar idiosyncrasy. Beyond the sudden and irregular attacks of deep-seated pain in the upper part of the abdomen which sometimes disappeared as rapidly as they came, leaving behind them no indication of their presence, there was nothing calling for special treatment. The urine remained normal, it was in no way tinged with bile, and the skin was perfectly clear. By degrees, however, the pains returned at shorter intervals ; they became more severe in character, were invariably preceded by shivering, and accompanied by a feeling of sickness, ending occasionally in vomiting, and were followed by a gradually deepening jaundice. For several weeks the pains kept returning in spite of a varied treatment, and whilst at one time from the patient's age the question of malignant disease was discussed, it was properly discarded for gall-stone—the intermittent character of the symptoms, the sudden pain and subsequent jaundice all pointing in this direction. The increasing feebleness of the patient rendered it necessary that relief should be obtained as early as possible. Accordingly, Mr. Dodd and I simultaneously agreed to try the effects of olive oil—beginning with one tablespoonful, then two, three, four, five, and six tablespoonfuls given in one dose daily in milk. With the exception of a slight recurrence of pain on the second or third day after commencing the olive oil treatment, nothing occurred to interrupt a successful result or to mar the convalescence. The jaundice by degrees disappeared, and since March it has not returned. He is now in better health than he has been for the last five years ; he drives into Newcastle frequently to transact business, and he

takes walks regularly. In no case has illness more truly disappeared or health been more quickly regained, and at the same time never has this result been more distinctly traceable to a line of treatment adopted, than in this. The olive oil was continued for several weeks after the disappearance of the symptoms. Two grains of calomel twice a week and a few drops of extract of cascara sagrada every evening were the only adjuncts to the treatment by olive oil.

As opposed to the above, I will quote a case showing the result of olive oil treatment where jaundice had lasted for ten months. A female patient, 48 years of age, consulted me in the middle of January, 1893, for extreme debility, mental depression, and jaundice. Her history is briefly as follows: In June, 1892, she had an attack of acute indigestion, and felt pain in the stomach after eating, but had neither vomiting nor flatulence. This was followed by jaundice, which developed slowly and without pain during July. Since then jaundice has been permanent. There have been days when the skin was not so yellow, but the jaundice has never disappeared. Latterly the skin has been deeply tinged. There have been all the symptoms met with in these cases—viz., itching of the skin, constipation, dark urine deeply stained with bile but not albuminous, mental depression, loss of appetite, and xanthopsia. In addition there was a soft blowing mitral systolic murmur. The abdomen was retracted, the skin hung in loose folds, the distended gall-bladder could be felt moving with respiration; the liver was enlarged, and the splenic dulness was slightly increased. Believing that the case at its commencement had been one of catarrhal jaundice she was given mild saline purgatives, combined with small doses of euonymin, podophyllin, and salol. Oil of turpentine was subsequently tried as recommended by Dr. Ralfe for biliary concretions. During February and March she remained *in statu quo*, and this gave me the opportunity of trying salicylate of soda, with increasing doses of tincture of belladonna, but all to no purpose. In the month of April, as she was not improving, the jaundice being as pronounced as it was on her first visit to me, I determined to try olive oil. Of this I gave daily two tablespoonfuls in warm milk. It was with extreme reluctance that the patient undertook to carry out the treatment. Subsequently, however, she had little or no difficulty with it. She generally took the oil at bedtime. Within three weeks there was considerable improvement in the appearance of her skin and general condition. When I saw her in June the whole of the jaundice had disappeared, her skin was perfectly white, the urine no longer showed the presence of bile, the stools were normal, and all the unpleasant symptoms she had suffered from for ten

months had entirely disappeared. The persistence of jaundice for ten months in spite of vigorous medicinal treatment carried out by others as well as myself, and its gradual disappearance under the administration of olive oil, leave no doubt that the oil played an important part in the restoration of the patient. In the treatment of recurrent hepatic colic I do not claim for olive oil that it dissolves the gall-stone. How it acts I do not know. Nor do I regard the greenish concretions passed per anum by jaundiced patients thus treated as softened gall-stones. Microscopical and chemical examination have shown them to be practically nothing else than inspissated oil. As to its decided influence for good, however, in certain cases of obstructive jaundice I have no doubt. In such cases our experience at present is in advance of therapeutical explanation.—*The Lancet, October* 7, 1893, *p.* 870.

DISEASES OF THE URINARY ORGANS.

27.—THE SYMPTOMS AND TREATMENT OF CHRONIC GLYCOSURIA IN MIDDLE AND ADVANCED LIFE.

By Sir Dyce Duckworth, M.D., LL.D.

[The following excerpt is taken from a paper read in introducing a discussion on the subject at the British Medical Association, 1893.]

The subjects of chronic glycosuria in middle life may be of either sex. They are commonly persons of active habits, men and women of affairs, with good brain capacity. They are generally both muscular and inclined to obesity. Their appetites have been, or are large, and they have generally taken alcoholic drinks in moderation, or in some excess. The onset of symptoms of failing health in these persons is not infrequently attributable to some nervous strain, such as anxiety, grief, heavy trouble, worry, or undue excitement. Overwork is often mentioned, but this commonly means irregular work, accompanied by mental anxiety or apprehension, and is apt to be assuaged by high living and good drinking. "High thinking and plain living" do not commonly lead to glycosuria. The first symptoms to claim attention are generally feelings of exhaustion, fatigue, and undue irritability. There may be no remarkable output of urine, and no undue thirst. Lassitude, mental incapacity, and early production of fatigue are the complaints brought to us. In women there may be some vulvar pruritus. In all such cases we should examine the urine for glucose. That secretion will be found of

increased specific gravity, bright and clear, and uric acid crystals may rapidly form from it, and form a deposit of red gravel. Commonly there is no characteristic tongue of diabetes, no so-called "diabetic breath," no loosening of the teeth. The knee-jerks may be present. Some diminution of sexual desire and capacity may have been noticed. There is no extraordinary hunger. The skin is soft, and may readily perspire. The pulse is quiet, and commonly of high tension. The temperature is normal, and may even be subnormal. Sensations of heat may be felt, and even causalgia in the feet. There may be severe pains in various parts, evidently neuralgic, and especially in the back and loins, deep-seated, and so intense at times as to suggest aneurism, or some new growth pressing on nerves. A sense of weariness in the back is sometimes complained of. One of my patients affirmed that he always knew by this symptom when he was passing sugar.

In a large proportion of these cases gout figures either in the family or in the personal history, and often in both. Such persons have been described as suffering from gouty diabetes. In at least half of my own private cases I have observed this. The ages have varied from 25 to 76, but the majority have come first under my notice in the fifth decade of life, the disease having, in many cases, been established some or many years previously. My experience agrees with that of Sir Alfred Garrod as to the general absence of articular gout in such cases, any overt gouty symptoms having passed away as the glycosuria became established. This is a clinical fact of high importance. There may, however, be many minor tokens or characteristic indications of the gouty habit, such as fleeting articular or muscular pains, and occasional attacks of eczema. The tendency to formation, or excretion, of uric acid in the urine is indeed a marked feature in many of these cases. The phalangeal joints are often enlarged, and Heberden's nodes are not uncommon. Some authorities do not hesitate to consider such cases as examples of hepatic diabetes. Glycosuria in association with disorders of truly rheumatic nature is very rarely met with, but has been occasionally noted in cases of chronic rheumatic arthritis.

We may briefly consider in the following order the management and treatment of these cases—dietetic, medicinal and hygienic.

And first with respect to diet. I consider it wrong to employ before patients of this class the term diabetes. As a rule, it is found that the dietetic treatment for pronounced diabetics is distinctly harmful. Wasting and discomfort rapidly ensue. If the glycosuria is but transitory, improvement will follow without any severe restrictions. In but few cases does the latter plan prove of lasting value. Moderate restriction is commonly advisable in respect of saccharine and starchy elements. It will

generally be found that the patient is conscious of better digestion when the diet is not too strict, or when some relaxation is allowed.

It is always important to secure variety in the food taken. It is not advisable to curtail alcoholic drinks, the best of these being good Bordeaux and dry Moselle wines, diluted with water. These are commonly better than diluted whisky, which is so often prescribed, but the latter is allowable. Occasionally the glycosuria disappears with restricted diet, but more often is only subdued by it. I do not consider it advisable to employ opium in any form in these cases. I think the best results follow the use of alkalies given with ammonia in effervescence, and I combine with them cinchona and nux vomica. This plan may be carried out for ten or fourteen days in each month, the mixture being taken twice a day. I have a high opinion of the value of arsenic, and eleven years ago I published a recommendation of it in these cases in doses of from 5 to 10 minims of Fowler's solution. I am pleased to find that Dr. William Murray has a high opinion of arsenic as a drug for employment generally in diabetes. He recommends larger doses than I have ventured to give, and has reported instances illustrating the great value of it. I now employ, as he does, the acid solution with the liquor strychninæ and dilute nitro-hydrochloric acid, and have found this combination to prove a most excellent tonic in cases accompanied by languor and cardiac debility. Dr. Murray recommends restricted diet and codeine in the first instance, and looks to arsenical medication to complete a cure if persisted in. We owe him much gratitude for his encouragement in this procedure, and I am pleased to support his recommendation. There is, as yet, no exact knowledge as to the *ratio medendi* here. We all recognise the value of arsenic as a nutrient tonic, powerfully affecting the great nerve-centres, and promoting in them an increase of stability for evolution of nervous action. Arsenic in full doses may entirely destroy or annul the glycogenic function of the liver, leading, in excess, to fatty degeneration of that organ. In addition to this action, we may regard it as influencing the behaviour of metabolic processes in their intimate and molecular elements in the muscular as well as in the glandular systems. There are almost certainly other properties, germicidal and antiseptic, peculiar to this searching and far-reaching element. And yet we are unable to speak of it as a curative agent in any well-pronounced case of diabetes. It is, however, of supreme value in many of the cases we are considering to-day, and must not be dispensed with.

With respect to the general hygienic procedures which are proper for the subjects of chronic glycosuria, I may state that the best results follow from all efforts to lead regular and equable

lives, so that the better the general health, the less is the inroad made by the disorder on the system. The action of the skin is of high importance, and has long been so recognised. The air of the sea and of the sea coast is less beneficial to these patients than that of inland plains and subalpine districts, and the former may be very injurious unless in mild and sheltered parts. The question as to the value of hydrotherapeutics in these cases is a very large one. In suitably selected examples benefit is to be obtained from courses of water drinking at many spas. The properties of the waters, however, whether saline, alkaline, sulphurous, or indifferent, can hardly be said to exert materially specific effects in respect of the measures of relief which may be gained in such cases. Country life and environment is better than urban life. Intense application to business, and worry consequent on it, must be avoided, and an equable life be led. Fatigue and exposure are to be shunned, and the pleasures of society must be curtailed if the disorder is to be kept in check. Prognostic opinion depends upon a consideration of the vital stamina and general nutrition of each patient, and no less upon a review of the family history and proclivities.

The cases associated with gout, as a rule, do best. The course of the disorder is essentially chronic, and we do well to remember, with Trousseau, that chronic diseases require chronic therapeutics. Advanced life may be attained with due care, and the end comes when such a degree of vulnerability is reached that the nervous system and the bodily textures can no longer do battle with the onset of acute diseases such as pneumonia and pleurisy, before which they rapidly succumb. Trifling traumatism may here, as in chronic diabetes, be the signal for a fatal degree of gangrene, and even an attack of honest gouty arthritis may take a malign turn, and eventuate in such gangrenous changes as may prove overpowering. To be aware of these serious possibilities is to be on our guard in all such instances, and with care and perseverance we may sometimes happily extricate these patients from the jaws of death.—*British Medical Journal*, *October* 7, 1893, *p.* 774.

28.—PIPERAZINE AS A URIC ACID SOLVENT.

By H. Helbing, F.C.S., Analytical Chemist, and F. W. Passmore, M.D.

The remarkable solvent powers of piperazine on uric acid renders it very desirable to know positively whether it is really available in practical medicine in the treatment of uric acid

deposits in joints, kidneys, and bladder. We therefore with pleasure abstract from *Helbing's Pathological Record* some positive information on the subject.

Piperazine belongs to a class of bodies which, owing to their complex organic nature, are not so easily dealt with as many other substances employed in the treatment of diseases. It has therefore been thought advisable to make a detailed study of the chemico-physiological relations of piperazine to uric acid under various conditions, and thus to furnish a guide which will enable the physician and even the physiologist, who cannot be expected to have an exact detailed knowledge of the physical and chemical properties of the base, to judiciously apply and use piperazine, and to clearly understand the results obtained.

Piperazine marks a new departure both in a chemical and a therapeutical sense. As a chemical substance it is the representative of an entirely new series of organic bases, and as a medicinal product it is the first organic bases that has been employed, not to modify the course of the metabolic changes undergone in the system, but to aid in the removal and prevent the undue accumulation of one of the most important products of those changes, namely, uric acid.

Whatever may be the primary cause of gout, stone, renal colic, and other diseases associated with the uric acid diathesis, the abnormal deposition of uric acid in insoluble form in the various organs and tissues is the evident and direct cause of the pain and trouble. To remove these concretions and prevent their formation has been one of the most constant and difficult problems that has confronted the physician in all ages. It is a subject of discussion in the earliest therapeutical literature, and has remained unsolved down to the present generation.

Apart from the endeavour to minimise the production of uric acid in the system as far as possible by careful regulation of diet and of bodily habits, the most feasible method of procedure would appear to consist in the exhibition of a solvent which shall keep the uric acid in a soluble form, so that it can be eliminated from the system in a normal manner. In this sense the question becomes a chemical one, or one in which the chemist can materially aid the physiologist in studying the chemical relations and physical properties of the various uric acid compounds.

The field for the selection of a solvent for uric acid is necessarily limited by the condition that the solvent must be able to penetrate into all tissues and organs in search of uric acid. Consequently the solvent itself must be soluble under all conditions and in all the combinations that may occur in the organism. Most important of all, it must be free from any disturbing influence upon the normal chemical changes progressing in the various parts of the body.

Chemical investigation of uric acid demonstrates that bases are specially indicated as solvents. Salts of the alkali metals appear to fulfil some of the conditions imposed. The carbonates or citrates are soluble enough to allow them to penetrate the most deep-seated tissues, and their presence in reasonable quantities does not materially affect the vital processes. But do they act as solvents? Under some conditions undoubtedly yes, in others equally certainly no. The cause is not far to seek. There are two classes of urates or uric acid salts of the alkali metals.

The neutral urates, especially lithium urates, are comparatively soluble salts which are formed in the presence of excess of alkali, and so long as the uric acid exists in this form there would be no difficulty in its elimination from the system. But the most feeble acids, even carbonic acid, are capable of decomposing these neutral urates, converting the neutral into acid urates.

Acid urates of the alkali metals are almost if not quite as insoluble as free uric acid. As a consequence the uric acid dissolved in neutral or faintly alkaline liquids, like the blood, tends to separate as an insoluble acid urate as soon as it encounters an acid secretion. From such an acid liquid, as the urine, surcharged with acid urates, deposition takes place either in the form of loose granular crystals, or as concretions on a suitable surface. The alkaline treatment is powerless to arrest such deposition or to remove the deposits so formed, and frequently by facilitating the concentration of the uric acid in certain secretions, may aggravate the disease and increase the growth of calculi. If alkali be administered in such quantities as to render the urine itself alkaline, precipitation of phosphates and other complications present themselves.

A solvent is required that shall not only dissolve uric acid concretions wherever met with, but shall maintain the uric acid in a soluble combination under any condition that may obtain in the organism. Hitherto only inorganic bases have been employed, and these fail to answer all requirements.

Piperazine is an organic base, with the constitution represented by the formula $C_4 H_{10} N_2$. In some respects, therefore, the constitution of piperazine is analogous to that of benzene, and, like the latter, there is no doubt that the chemical stability of the compound and its indifference to change is due to its symmetrical molecular structure.

Piperazine crystallises from water in white lustrous tablets, and in the form of various hydrates. When anhydrous it melts at 104-107° C., and boils at 145° C. Exposed to the air it rapidly attracts water as well as carbonic acid, and deliquesces

to a colourless liquid. It is excessively soluble in water, and the aqueous solution has a strong alkaline reaction, but is at the same time free from any corrosive property, and is practically tasteless. Piperazine volatilises with the aqueous vapour from boiling solutions, and by addition of salt to the solution can be completely driven over on distillation with steam.

Pharmacological experiments by von Mering and by Kobert have demonstrated that piperazine is absolutely non-poisonous.

Piperazine forms definite well-crystallised salts with acids. The hydrochloride, $C_4\ H_{10}\ N_2\ 2HCl$, is also very soluble in water, less so in alcohol. It crystallises in long silky needles.

In consequence of the soluble character of piperazine urate, piperazine dissolves uric acid very readily even at low temperatures. The following experiments were all carried out at blood temperature (38°C.).

Uric acid calculi of diverse composition were divided and suspended in 1 per cent., 0·1 per cent., and 0·025 per cent. aqueous solutions of piperazine. Even in the most dilute solution the solvent effect of the piperazine was discernible, eating into the layers of the stone which consisted of uric acid, so as to leave distinct furrows. After a time the action was continued so far that the stone disintegrated. Taken out, dried, and weighed at different intervals a distinct loss in weight was ascertained, and uric acid was found in solution. Owing, however, to the complex nature of the stones no consistency in the rate of solution could be ascertained, the amount dissolved varying irregularly at different times. These experiments were therefore continued on compressed lumps of uric acid, and also of acid urate of soda.

In normal urine, to which the corresponding quantities of piperazine had been added, scarcely any solvent effect upon the stones was developed. Even when the urine was neutralised with alkali previous to the addition of piperazine, the solvent action was very slight, showing that the loss of activity was not due to the acidity of the urine. No urates were, however, deposited as in control experiments, and no doubt part of the energy of the piperazine was absorbed in this direction. These experiments were also continued upon compressed uric acid and acid urate of soda.

The uric acid employed was prepared from serpent's excrement, which consists almost entirely of ammonium urate, by pulverising and boiling with excess of caustic soda solution in an open porcelain dish until ammonia ceased to be driven off. The solution was then filtered, and the uric acid precipated from the filtrate with excess of hydrochloric acid. The precipate was brought upon a calico strainer, washed with

water, and pressed into a hard cake beneath a hydraulic press. Any adherent water was driven off at 100° C., the hard mass removed from the calico, and cut up into cubes of convenient size.

Then follow the results of a number of experiments, the results of which appear to us to be as follows:—

Piperazine will with certainty dissolve uric acid concretions or acid sodium urates when in water only, and even when the piperazine is in very dilute solutions. Its power is, however, so little when the uric acid concretion is in normal urine that it is useless for dissolving concretions in the bladder. If, however, the bladder be emptied and the piperazine solution injected into it, the solvent action is obtained. This would be favoured by the patient taking no fluid to drink for some time so that the secretion of urine is reduced to a minimum.

As an example, a 1 per cent. solution will dissolve a concretion weighing about 30 grains in 1·3 hours.

It appears also that in the kidney itself by the administration internally of piperazine the calculus may be dissolved. Schott describes a case of severe renal colic, in which hypodermic injections, potash and lithia salts, failed to afford any relief, but when an operation appeared unavoidable, after eight days' administration of piperazine in aqueous solution, a stone half the size of a bean in a state of disintegration was passed, and completely disintegrated when left in the water.

The proper dose to give is about 15 grains twice a day, dissolved in some mineral or effervescing water. The alkalinity of the blood is favourable to its action, and the drug is not oxidised or destroyed in the organism.

The following are the general conclusions arrived at:— (1) Piperazine is the best solvent of uric acid and insoluble urates, for even in very dilute solutions it is capable of dissolving and disintegrating uric acid concretions, and its employment is therefore indicated in diseases of the uric acid diathesis. (2) Neutral piperazine urate is seven times more soluble than lithium urate. Its solubility at 17° C. is 1 in 50, and that of lithium urate only 1 in 368. (3) The neutral and soluble urate of piperazine is the salt always formed under normal conditions even in excess of uric acid, and in this piperazine possesses a further advantage over other uric acid solvents, such as lithium, which frequently forms insoluble acid urates in the body. (4) Piperazine is not oxidised or destroyed in the organism, but is able to exert its full solvent effect throughout the circulatory system, for, as is proved by actual experiment, piperazine is excreted by the urine undecomposed and combined with uric acid.

29.—ON THE TREATMENT OF ADVANCED DIABETES.

By Karl Grube, M.D.

Most of what is known as to the treatment of diabetes is known by experience *in homine vivo*, and I may here point out the interesting fact that it has been long known from experience that in very advanced cases, in which coma diabeticum is imminent, it is absolutely necessary to give chiefly food containing a large quantity of carbohydrates. Why that should be so has been but recently learned from Dr. Hirschfeld, who found by experiment that acetonuria can be produced in healthy persons by giving them food consisting only of albumen and fat, and that it can be arrested by adding some carbohydrates. He found at the same time that by giving carbohydrates in sufficient quantity he could prevent the appearance of acetone in the urine in such diseases where there is a tendency to acetonuria—for instance, in high fever. The appearance of acetone and diacetic acid in the urine of patients suffering from diabetes must be explained by the fact that in severe cases of this disease the carbohydrates for the most part leaves the body unchanged, because the organs have lost the faculty of oxidising them. Therefore the diabetic patient must be regarded as a person living only on albumen and fat. The only way of preventing acetonuria becoming too intense and developing into coma diabeticum is to impregnate the system with carbohydrates. I have experienced the truth of this statement in several cases.

The first thing in dealing with diabetes is to remember that all cases cannot be treated alike. There are principles which hold good in all cases, but, on the other hand, each case requires its own special treatment. I believe it to be one of the greatest mistakes, especially in severe or advanced cases of diabetes, to keep the patient to a diet consisting purely of meat, fish, eggs, and such substitutes for bread as gluten-bread, &c. I do not deem it advisable to give up carbohydrates entirely, not even for a time ; in fact, in each of my cases the patient was allowed to take potatoes at least twice a day in moderate quantity. This was the principle on which Dr. Schmitz acted for years, and in no one case was the result otherwise than satisfactory. He very rightly pointed out in the above-mentioned pamphlet that if no farinaceous food was allowed him the patient, who could not tolerate such a one-sided diet, would indulge against orders and was likely to take more than was advisable for him. Therefore it was better to allow a small quantity and keep the patient strictly to it. His and my own experience both show that brown bread and toast are more injurious than plain white bread. All fruit, I think, should be forbidden, as no kind of

fruit contains less than between 8 and 10 per cent. of sugar, and fruit is a form of food more easily dispensed with than are potatoes and bread.

On this point I may be allowed to add some remarks on the use of saccharin, which of late has become very general as a substitute for sugar. I have no objection to patients taking a small quantity of it, but if used too freely it is apt to cause indigestion. It has but lately been discovered that "lavulose" is a better substitute, and one which the diabetic organs are able to utilise. I have proved its efficacy in eight cases. Its great value lies in the fact that it is in itself nourishing, while, on the other hand, saccharin is useless to the system. Doubtless further investigations will show its usefulness in diabetes.

As is natural in a case of a disease so prevalent and yet so little understood as diabetes, a great number of remedies have been recommended, some of them on apparent physiological grounds and others because they had been found of use in diseases which seem to be related to diabetes. Scarcely one can be pointed to as having a specific effect upon the disease. Some mineral waters—especially the alkaline waters of Neuenahr, Carlsbad, and Vichy—are known to be of great importance in the treatment of diabetes. I have only tried those of Neuenahr, and have found the effects of them to be very beneficial. In what way the waters operate cannot be exactly ascertained, but it is certain that after a short use by the patient some of the troublesome symptoms—more especially the thirst and the dryness of the throat—are alleviated. It was Dr. Schmitz's opinion that the alkaline waters aided the system to oxidise the carbohydrates.

Another point of great value in the treatment of diabetes is insisting on bodily exercise unless the patient's strength is already too far reduced. Massage is of great importance, especially the kneading of the muscles. It alone tends to decrease the amount of sugar. It has to be remembered that exercise should never be carried to excess. There are sometimes traces of albumen in the urine to be found after over-fatigue. Massage much more easily prevents the possibility of over-fatigue, because the amount of exercise that is desirable for the patient can be thereby more easily controlled.

Weakness of the heart is a common symptom of advanced diabetes; it is scarcely necessary to say that in such cases especial care is needed in order to avoid overstrain.

Neuralgic pains in the limbs and trunk form a frequent and troublesome symptom of the disease, intercostal neuralgia being especially common. In such cases one has to avoid massage of the tender parts. Sometimes the pains decrease when the amount of sugar diminishes, but often they still remain when

the sugar has diminished or has even quite disappeared. In such cases the antineuralgic remedies are sometimes of use, and sometimes electricity lessens the pains, the faradaic or galvanic current being used.

In a case of developed coma diabeticum the prospect is, as a rule, a hopeless one. The chief thing is to prevent the occurrence of the symptom in the manner I have described above.

These are, in short, the main points of the treatment of diabetes, to which I wished to draw attention. In giving them here I desire to point out that in my opinion it is a great mistake to treat the patients too one-sidely, and to think it the chief part of the treatment to exclude the taking of carbohydrates. The important point of the treatment is not to carefully avoid the carbohydrates, but rather to try to induce in the patient's system the faculty of again utilising them.—*The Lancet, December* 30, 1893, *p.* 1613.

30.—ON THE TREATMENT OF GRANULAR KIDNEY.

By W. Howship Dickinson, M.D., F.R.C.P.

With regard to chronic albuminuria, I will put aside that of lardaceous origin, and speak with reference only to the granular or fibriotic kidney. Many are the reminiscences which testify to the lengthy and almost indefinite quiescence of the disease. A man may suffer from it for a quarter of a century and be practically none the worse, though such cases are not common. The heart will be hypertrophied as a salutary adjustment, and the dropsy which so often marks the beginning of the end may be indefinitely postponed. For tens of years there may be no obtrusive symptoms, or anything to prevent the patient, if he be one, from pursuing his usual way of life, presuming that this is one of ordinary moderation and care, and that he does not wholly ignore his disease. It may even be better for him to remain in ignorance of it than to be over-treated or over-restricted. The physiological agencies, diet and climate, first present themselves for consideration. As to diet, in a quiescent case I commonly advise temperance rather than austerity—one meat meal, one fish meal, and one meal without meat or fish. Farinaceous and vegetable food without restriction, milk without stint but without insistence, watery drinks freely, and the less alcohol the better. I believe a purely milk diet is not generally advantageous. One of the hardest pulses I ever felt belonged to a man who conscientiously restricted himself to a milk diet and ultimately died from apoplexy. It is

a matter of importance, and even of life, that in certain forms of renal insufficiency the free drinking of aqueous liquids should be permitted, and even encouraged. When the urine is of low specific gravity and poor in quality, it can provide sufficient exit only when it is in large amount. It is a condition of life that quantity should make up for quality. The quantity is maintained by that of the water introduced as drink. In such a case as I am supposing the solid food should be light and the liquid abundant. I have seen fatal consequences follow the reversal of this rule in the treatment of the advanced granular kidney.

As long ago as 1867 I took upon myself to advocate the employment of a warm climate in the treatment of chronic renal disease—a therapeutical measure which has since been widely resorted to. If it be said that the results are disappointing, this must be taken as implying no more than that too much is expected. No climate can turn fibrous tissue into tubes, or a granular kidney into a healthy one; but the crippled organ may be relieved of work, the insufficient gland may be made sufficient, and the easily-irritated structure may be saved from inflammatory attacks by the influence of some place where cold winds cease from troubling, and the kidneys are at rest. The desiderata may be said to be warmth, uniformity of temperature, and dryness of air. I think that the first consideration should be the temperature, regulating as it does the action of the skin and of the kidneys. The mean temperature, as expressing broadly the general attitude of this over-ruling physiological influence, is, perhaps, the most important guide in the choice of a climate. The daily range, or variability within each twenty-four hours, is of obvious importance, but probably less so than is the daily mean temperature. A great daily range implies a corresponding fall in some part of the twenty-four hours, which must be of paramount importance to persons exposed. The low temperatures are at night, or at least after sunset, when the careful valetudinarian will not be fully exposed to them. It is therefore probable that the daily range is of less importance to a person who is his own master than either the mean temperature or the relative humidity. It may be laid down that the chief atmospheric conditions to be desired in renal diseases are a high mean temperature and a low relative humidity.

I have sent many patients to the Riviera, and have, on the whole, been disappointed with the results. There the daily range of temperature is considerable, the evening fall is abrupt, and the difference between sunshine and shade is great. These drawbacks belong to other subtropical places, but at some of these there are greater compensations. As compared with the

Riviera, the south of England has the advantage of greater uniformity and the disadvantage of greater humidity. I believe Algiers to be preferable to the Riviera and Egypt to be preferable to both, notwithstanding the great daily range of temperature. The special advantage of the Egyptian climate would appear to be best obtained at Luxor or some similar place. The great evening fall of temperature must, of course, be specially guarded against. Theoretically Cape Colony should be an excellent winter resort in renal disease, the English winter being exchanged, after no very laborious journey, for the African summer; but some who have been there do not report favourably. Dr. Grabham, of Madeira, tells me that he has there witnessed good results in cases both of post-scarlatinal nephritis and advanced Bright's disease. I have myself had no experience of Madeira as a resort in cases of renal disease, but the particulars of its climate testify to its suitability in regard to mean temperature and equability. I think that patients who cannot travel as far as Egypt or Algiers, or at least further south than the Riviera, may be content with a selected spot in the south of England. I have known many patients to do well at Bournemouth and Torquay; Ventnor deserves more consideration in this respect than it has received; while Falmouth and Penzance promise better than any one of the three. I have an impression that Falmouth will be found to be less humid than Penzance; should it prove so, it will be the better resort in renal disease, but on this point exact information is required.

Next as to treatment by medicines. The first necessity is to keep the bowels regular and loose, or at least free. Speaking now only of chronic and quiescent cases, a good practice is to give a ferruginous laxative on going to bed and on getting up, say, a drachm of aloes wine, a drachm of sulphate of magnesia, ten minims of the tincture of the perchloride of iron, and, perhaps, two or three minims of liquor strychniæ; or the decoction of aloes and tartrate of iron may be substituted for the wine and perchloride of iron, and sulphate of soda for sulphate of magnesia. The doses should be adjusted so that the bowels may act twice a day, or at least three times in two days. If the urine is over acid a suitable mixture may be made of tartrate of iron with tartrate of potash, and sulphate of potash or soda. Iron must be given with caution, aud omitted if the patient is full-blooded, over-fed, or constipated; anæmia is, of course, an indication for it.

The normal termination of the granular kidney is by uræmia, though there are many pitfalls by the way. In order to obviate this tendency to a fatal issue sweating should be enforced where the tendency is declared by headache, vomiting,

or otherwise. A Turkish bath at regular intervals, every ten days or a fortnight, may long ward off what would otherwise happen. When from the distance of the bath, or the state of the patient, this is not available, the lamp bath should be used at home; and I may speak especially of a modification of it which for some years past I have been in the habit of employing. When a patient is in mortal peril one may hesitate to enforce so powerful a measure as the enclosure of the whole body in hot air; his hold of life may be feeble, and there may be a fear of disturbing it; but if the heated air is applied only to the feet or below the knees much good may be done, and, so far as I have seen, never any harm. One wicker arch only is used instead of several; the hot air thus limited will make the lower extremities perspire freely, while the whole body will do so to a less degree. I have found this partial bath—"the leg bath," as I call it—to be invaluable. If this procedure does not cause the patient to perspire, as is sometimes the case, pilocarpine may be injected subcutaneously before the bath is applied. Another preliminary measure which is useful in such cases is to place the patient for two or three minutes in a bath of very hot water, say, at 110° F., before the hot-air bath—which in such a case would, of course, involve the whole body—is applied.

Renal asthma, distressing and alarming as it is, admits of relief, and even of cure, by treating the uræmia in which it takes its rise. Ethers, alcohol, and nitrite of amyl are of temporary use, but the mainstay is in the evacuants, hot-air baths, calomel, and the hydragogues. The pulse under these attacks often shows extreme over-tension, on lessening which they will abate, or cease to recur.

With regard to the over-tension of the advanced granular kidney a caution may not be out of place. We should not attempt to lower the pulse-tension to an ideal of health, as the result would probably be death; the circulation is carried on under difficulties, and only by means of increased force. The hypertrophy of the heart is a measure of salvation and the increased tension is a necessary condition. We should consent to a moderate increase of tension, and seek to modify it only when it is excessive.

Mental disturbance is rare, but not unknown, in connection with the advanced granular kidney. Depression or melancholy may long precede death. More immediately foretelling the fatal issue are the lesser degrees of wandering or delirium, and what I suppose may be called "chronic mania," insanity with delusions. I have learned to regard the latter conditions as of evil omen.—*The Lancet, February* 10, 1894, *p.* 317.

[See "Treatment of Dropsy in Albuminuria," in *Synopsis* of this volume of the "Retrospect."]

31.—ON THE TREATMENT OF URÆMIA.

By Beverley Robinson, M.D., Clinical Professor of Medicine in the Bellevue Hospital.

In treating uræmia, there are cardinal principles involved. These are, first, to subtract the poison—get rid of it, carry it out of the system ; second, to neutralize it so far as possible. In order to carry out the first indication, we recur to the use of diuretics, or those drugs which increase the bulk of urine, and with it the amount of solid constituents eliminated. Among selected medicaments, potash salts are frequently employed, and no doubt at times with obvious benefit. Nevertheless, in view of acquired knowledge in regard to the poisonous effects of potash salts when taken into the body in the form of food in those who suffer from uræmia, we should be very careful in limiting the amount of these salts when taken as medicine. One of the favourite diuretic infusions is that of digitalis, yet to its employment there are distinct and important objections. Frequently, in these cases, the kidneys are almost, if not quite, impermeable. This impermeability may be due to one cause or a combination of causes. There may be a clogging up of the renal tubules ; but there may also be a spasmodic vascular condition, or a passive congestion of the renal vessels. Digitalis, from its action on peripheral vessels, tends to increase this contraction or hyperæmia rather than to diminish it. Inasmuch, therefore, as very little of the drug can be eliminated through the kidneys, it is not infrequent to note the effects of its accumulation in the system, as shown by nausea and vomiting, repeated at times in a distressing and threatening manner. If these phenomena are correctly interpreted, and the dose of digitalis is diminished or temporarily given up, the patient will at times be relieved of the unpleasant symptoms referred to. If, on the contrary, the symptoms be regarded as uræmic, and digitalis be continued in the same or augmented doses, the morbid symptoms, instead of being favourably modified, or disappearing altogether, will continue and become worse. Of course the symptoms may be of a mixed origin. We may have the union of what pertains to uræmia, on the one hand, and digitalis intolerance, on the other. Under these circumstances, it is also rational to stop the use of the drug.

In those cases in which a weak heart is an important, not to say a primary, factor in causing uræmia, it is not amiss to give digitalis. In some of these patients, indeed, I have known it surely to effect very good results.

Diaphoresis, as well as active purgation, remove a considerable amount of water from the body. They also abstract from the

economy what is poisonous. In affirming this fact, however, I must modify it by saying that they remove relatively small amounts of poisonous excreta. These amounts, when compared with the effect of blood-letting, are about nine-tenths less. Besides, it must be remembered that if water be removed from the blood by these methods of treatment, a smaller quantity by so much will be able to pass through the kidneys, and these emunctories of poisonous excreta, of such primary importance, will not recover their normal functions so rapidly, or indeed so perfectly.

In addition to the foregoing means of treatment, and as one of undoubted great importance, and against which, I believe, no forcible objections can be urged, I would uphold the use of water by high enemata ; as a rule, they should be given moderately cold. These enemata have been used quite a number of years by well-known practitioners with a view to causing the contraction of renal vessels through the reflex stimulation of the abdominal nervous centres. Besides, they act by increasing vascular tension through absorption of the water and filling the vessels. Thus diuresis is promoted. I am also convinced that they are directly of benefit in diluting the poisonous matters contained in the blood and thus diminishing the morbid symptoms due to these substances when present in a concentrated form. Certainly there can be no question about the absorption of the fluid employed in very considerable amount. Whatever portion is rejected by the bowels, no doubt brings away much of the fermentative products of the ingesta, which are unquestionably more or less continued and added sources of toxæmia, in many instances. I have made use of such injections from these standpoints with the happiest effects in one instance. In this example the patient was in such a depressed condition of lowered vitality that I thought it wiser to employ the water warm, rather than cold—the precise temperature being slightly above blood-heat. To the water was added about one per cent. salt, and high injections were given several times daily with a douche bag and a medium size, long, soft catheter of red rubber attached to the nozzle of the douche bag. The patient lay in the dorsal decubitus during the time the injection was given. There was little or no question in regard to the benefit received from these injections : the pulse improved, the heart action was strengthened, increased flow of urine took place, vitality was evidently increased and the entire aspect and behaviour of the patient was rendered more encouraging. The case was one in which, following upon typhoid fever, the gastro-intestinal mucous membrane became affected, apparently with a low type of catarrhal inflammation, and symptoms of nausea and vomiting and non-assimilation of food were very threatening. These

symptoms were connected with, and probably in part caused by, inadequacy of renal excretion under the dependence of slight or moderate renal changes.

Whenever the uræmic phenomena are at all menacing and other indicated therapeutic means have failed to relieve, in very many instances it is judicious practice to recur to venesection, or blood-letting by means of cups or leeches. Sometimes coma or convulsions will disappear while the abstraction of blood takes place. In strong, robust patients there can be little doubt that blood-letting in considerable quantity, up to twelve or twenty ounces, may be safely and advantageously employed. In other cases of delicate women or young persons blood-letting must not be too abundant on account of its possible weakening influence. Formerly, blood-letting, as we all know, was used a great deal more in these cases than it is to-day, and it is certain that it was frequently abused. Yet, it is clear that clinical evidence and scientific research justify and support its use, and go to prove that many lives are directly saved by this means, which would otherwise be inevitably sacrificed.

I have seen several patients suffering from uræmic phenomena of threatening nature, in whom all other rational means had been employed without avail, evidently greatly benefited by abstraction of a notable quantity of blood. In one instance, after the venesection I made use of saline tranfusion, with at least temporary good effect. In another case, in which my house physician performed the operation of saline infusion, a temporary good result was also obtained. In both these cases a fatal result followed, mainly because the renal changes were very far advanced and practically incurable. I am convinced, however, from close observation of these two cases of saline transfusion following abundant loss of blood by venesection, and from one other observed by me in which previously to transfusion there was no considerable loss of blood by venesection that the operation of transfusion in the treatment of uræmia may be at times very useful in tiding over an imminent period, and perhaps, in enabling the patient to recover, when without the operation he would surely die.

In one instance that came under my observation, the hypodermic use of the saline solution apparently caused a considerable degree of pain. It is stated, however, by those who have made frequent use of them, that they are, as a rule, free from this objection. There is no doubt in my mind that even when a patient is in *extremis*, and the heart beats very weak, and the pulse a mere flicker, that these warm salt solutions may be taken up by the vessels of the subcutaneous layer in a remarkable manner. At times, and even in the presence of symptoms of acute uræmia, the methods described, for different reasons, may not

appear the best, or the only ones to employ. The anæsthetic effect of chloroform may be confidently resorted to, and we are all aware that chloroform will at times shorten very manifestly a convulsive seizure.

In certain instances, it would seem as if the hypnotic and quieting effects of chloral by the mouth or by rectal injections were especially called for; some cases of convulsions, followed or preceded by delirium, may be thus advantageously treated. In my judgment, in almost all cases in which we properly dread the injurious effects of the opiates, and especially of morphine, and yet feel as if they might be useful, chloral may often be very properly substituted for them.

Opiates, as I believe, are of evident value only in rare cases.

Much has been said for and against the use of pilocarpine as an agent which is at once speedy and effective in arresting uræmic convulsions. On account of the readiness with which it can be employed hypodermically, and in view of its diaphoretic action on the skin its favourable acceptance can be easily appreciated. In one instance, which I can now recall with great vividness, I am confident that this active principle was the direct cause of profuse salivation, which, taken with an œdema of the lungs, also occasioned by it, hastened, rather than retarded the fatal termination, primarily due to renal changes. It is also true that at times even a small or moderate dose of pilocarpine will occasion symptoms of heart failure which require immediate stimulation by means of brandy and ammonia to overcome. No doubt the danger from profuse salivation and œdema of lungs should be dreaded in cases in which the skin and subcutaneous tissue are infiltrated with serum, and in which our power to re-establish the function of the kidneys is very imperfect. On the other hand, it would seem as if pilocarpine were a drug that could occasionally be usefully employed.

While chloroform, chloral, the bromides, and pilocarpine may at times control, in a measure, and visibly shorten the severity and duration of different nervous phenomena connected with, or dependent upon, a uræmic state, none of them meets satisfactorily the underlying pathological causative condition. For this reason, we must keep in view the fact that it is essential that a diet composed mainly of milk should be adhered to, at least during the acute manifestations of uræmia.

Finally, intestinal antisepsis is one of the most important indications to be carried out actively. Naphthaline, benzo, or beta naphthol, salicylate of bismuth, sub-gallate of bismuth, are all useful remedies in lessening the amount of intestinal fermentation, which is a powerful factor in the continuance of many cases in which uræmic manifestations are not infrequent in a mild or chronic form.—*New York Medical Record, March* 17, 1894, *p.* 322.

Surgery.

GENERAL SURGERY AND THERAPEUTICS.

32.—WYETH'S BLOODLESS METHOD OF AMPUTATION AT THE HIP JOINT.

By J. A. Wyeth, M.D., Professor of Surgery in the New York Polyclinic.

[Prof. Wyeth records a fourth successful case of amputation by his method, and gives the following new description of his procedure.]

As set forth in a recent paper read before the New York State Medical Association, and published in the *Medical News* of December 9, 1893, I have, as a result of the experience of other operators and myself, improved upon the technique of this operation, as given in the earlier publications. Under strict antisepsis it is as follows:

1. With the patient in the usual position for a hip-joint amputation, the limb should be emptied of blood either by elevation of the foot and lowering of the trunk, or by the Esmarch bandage applied from the toes to the trunk. Under certain conditions the bandage can be only partially, or may be, not at all, applied. When a tumour exists, or when septic infiltration is present, pressure should only be exercised not quite to the diseased portion for fear of driving septic matter into the vessels. After injuries attended with great destruction, crushing, or pulpification, of course the Esmarch bandage is not applicable, and one must trust to elevation to save as much blood as possible.

2. While the member is elevated, or before the Esmarch bandage is removed, the rubber-tubing construction is applied.

The object of this constriction—and it is the chief point in the method—is the absolute occlusion of every vessel at the level of the hip-joint safely above the field of operation, permitting the disarticulation to be completed and the vessels secured before the tourniquet is removed.

To prevent any possibility of the tourniquet slipping I employ two large mattress-needles or skewers, about three-sixteenths of an inch in diameter and ten inches long, one of which is introduced one inch below the anterior superior spine of the

ilium and slightly to the inner side of this prominence, and is made to traverse superficially the muscles and fascia on the outer side of the hip, emerging on a level with, and about three inches from, the point of entrance.

The point of the second needle is made to enter one inch below the level of the crotch internally to the saphenous opening, and, passing squarely through the adductors, comes out an inch below the tuber ischii. The points are at once shielded by bits of cork to prevent injury to the hands of the operator. No vessels are endangered by these skewers. A piece of strong, white-rubber tube, half an inch in diameter and long enough when tightened in position to go five or six times round the thigh, is now wound very tightly around and above the fixation needles, and tied. If the Esmarch bandage has been employed, it is now removed. Dr. Lamphear succeeded in holding the construction in place with only one (the outer) needle. Dr. Deaver was equally successful in holding the tubing well up by two strips of roller bandage, one before and one behind, held by an assistant, and thus dispensing with the needles. Since the needles are, however, absolutely safe, easy to obtain, and inexpensive (a piece of telegraph wire, even, will suffice) and entirely out of the way, I do not see any benefit to be derived from their disuse. On the contrary, I should be afraid to operate without them.

3. In the formation of flaps the surgeon must be guided by the condition of the parts within the field of operation. When permissible the following method seems ideal: About six inches below the tourniquet a circular incision is made, and this is joined by a longitudinal incision commencing at the tourniquet and passing over the trochanter major. A cuff that includes the subcutaneous tissues down to the deep fascia is dissected off to near the level of the trochanter minor. At about the level of the trochanter minor the remaining soft parts, together with the vessels, are divided down to the bone by a circular cut, and, in order to facilitate the search for the vessels, the soft parts are rapidly removed from the femur for several inches below the line of the divided muscles. At this stage of the operation the larger vessels, veins as well as arteries, should be tied with good sized catgut. As suggested by Professor Murdoch, of Pittsburg, I now leave the entire extremity intact and use the full length of the limb as a lever in dislodging the head of the bone.

When the larger and easily recognised vessels have been secured, the muscular attachments to the upper extremity of the bone are lifted off with scissors or knife, keeping along very close to the bone. Holding the soft parts away with retractors, the capsular ligament is exposed and divided in its circumference. Forcible elevation, abduction and adduction of

the thigh permit the entrance of air into the socket, and, at the same time, rupture the ligamentum teres, and the disarticulation is thus easily and rapidly effected.

Properly conducted up to this point, not a drop of blood has escaped, except that which was in the limb below the constrictor when this was applied. If now the tourniquet be carefully and gradually loosened each bleeding-point may be determined and the forceps applied as required until the tube is entirely removed.

Should any difficulty be encountered in the effort at enucleation (which is scarcely possible), the same precaution in securing all bleeding points should be exercised in removing the tourniquet, and enucleation completed with the tourniquet out of the way.

4. There remains the closure of the wound, with the usual precaution of drainage. I prefer silk-worm gut for suture material, and one good-sized rubber drain from the acetabulum out at the most dependent part of the wound.

When by reason of the proximity of a neoplasm or the destruction of the parts by accident or disease, this ideal method is not practicable, any modification may be practised, preference being given to the incision that keeps furthest from the tumour or gives the healthiest flaps.

Before concluding the consideration of the technique I wish to emphasize a point of great importance. When by reason of severe hemorrhage before operation, or when from any pathologic anæmia or condition of weakness, the operation should be rapidly completed and the small amount of blood that will necessarily be lost from capillary oozing should be saved, suturing of silkworm-gut should be rapidly introduced, the wound packed with hot sterilised plain gauze (not iodoform or bichloride gauze), and the sutures temporarily tightened for snug compression of the wounded surfaces. This packing at once controls all oozing and can be removed, and in from twenty-four to forty-eight hours after reaction the sutures finally secured.—*New York Medical Record, January* 13, 1894, *p.* 34.

33.—ON THE QUENCHING OF THIRST AFTER ABDOMINAL OPERATIONS.

By Charles W. Cathcart, F.R.C.S., Assistant Surgeon, Edinburgh Royal Infirmary.

The thirst from which patients suffer after abdominal operations is so well known that I need not enlarge upon it. The cause of it, too, is sufficiently obvious. In such cases, fluids by the mouth are for a variable number of days contra-indicated, in order to obviate or minimise chloroform sickness, lest the

consequent retching might strain the recent abdominal wound, and also in many cases to keep down peristalsis of the intestines.

The nutrition of the patient during this period is maintained partly by small supplies from without, given as nutrient suppositories or enemata, and partly by drafts upon the reserves of fat stored up in the patient's body. Water, however, as is well known, is not stored up like fat, and the extra juiciness which may sometimes exist in the connective tissues will soon be exhausted. Therefore, as the lungs, skin, and kidneys are constantly excreting water, patients who are cut off from it after abdominal operations suffer very greatly from thirst, although, perhaps, only slightly from hunger.

In such cases common sense as well as physiological knowledge tell us that only a sufficiency of water will quench their thirst ; still, for want of a better method, the usual custom has been, and is, to put off the patient's urgent requests for a good drink with an occasional sip of hot water, a morsel of ice, or the corner of a wet towel, which as a great luxury they are permitted to suck.

It has often gone to my heart to have to use such obvious makeshifts as the lesser of two evils. Last year, however, when reading that the absorption of water injected into the rectum was so rapid that fluid lost in severe hemorrhage might be replaced by enemata instead of by infusions into the veins, it occurred to me that this absorptive power of the rectum and colon might be utilised for quenching thirst when the necessary fluid could not be given by the mouth. All the necessary data seemed complete as to the cause of the thirst and the way in which water might be taken up by the rectum to quench it, but I wished to test the plan before publishing it.

A few weeks ago a suitable case presented itself. I was called to operate for strangulated hernia. The patient had been vomiting for three days, and had an intense thirst when I saw him. At the operation I found the bowel viable and returned it, but I dared not give him much fluid by the mouth at first, lest I should bring back the sickness or stimulate peristalsis. Accordingly I gave orders that he was to have an enema of half a pint of warm water every two hours while he was awake.

In twelve hours his thirst, which had been a raging one when I left him, was much subdued and bearable. In twenty-four hours it was greatly relieved, and in forty-eight hours, although I could then venture to give him fluids by the mouth, he almost loathed the sight of them. Since then I have successfully used the method to quench thirst in chloroform sickness.

On speaking to various friends on the subject since I announced this communication to Dr. Russell, I find that though the idea is original so far as I am concerned, it had occurred to others before me.

Mr. Miller, some years ago, recommended the plan to his class of systematic surgery, and has employed it occasionally in the Infirmary. Mr. Logan Turner has seen it mentioned in some journal; and Mr. Alexis Thompson, on the recommendation of a writer in the *American Text-book of Surgery*, has employed it in the Infirmary after laparotomy, and after operations for hernia. When I heard that the plan had been already employed, I was inclined at first to withdraw this communication, but I afterwards decided not to do so, because, although the method has certainly been already published, it has not yet been generally recognised.

The fluid used should be either pure water or $\frac{3}{4}$ per cent. saline solution. To secure its absorption the quantity injected should not be larger than $\frac{1}{2}$ to 1 pint. It should be about the temperature of the rectum, and should be injected very slowly. By this method thirst may be quenched in all the cases where water is contra-indicated by the mouth but not by the rectum.—*Edinburgh Medical Journal, September*, 1893, *p.* 250.

34.—ON THE USE OF SULPHUR IN SURGERY.

By W. Arbuthnot Lane, F.R.C.S., Assistant Surgeon to Guy's Hospital.

In 1893 I published a short paper entitled: "How far is Sulphur likely to be of Service to the Surgeon?" The conclusions I summarised in that paper are as follow: (1) Sulphur applied locally appears to exert no deleterious effect on the health of the individual; (2) it gives rise to products which are powerfully caustic in their action, therefore it must be used in small quantities and with discretion; (3) it destroys all organisms, whether free in a space or growing in the surrounding tissues; (4) it acts much more powerfully upon recently-incised structures than upon granulating surfaces; (5) its action is rendered more uniform and general and less violent by mixing it with glycerine; and (6) if used in any quantity, the drug must be removed within a day or two and irrigation subsequently adopted. Since writing that paper I have used sulphur very largely, not only in tuberculous conditions, but in other infective processes, and with the most satisfactory results. The rule I adopt in the treatment of extensive tuberculous disease with much destruction of bone is, if there is a well-defined cavity in the bone, to pack it with iodoform; but if there be no such suitable space, and if it be impossible to remove with certainty all tuberculous material,

I place an emulsion of glycerine and sulphur in the cavity for twenty-four hours and then irrigate daily for a time with dilute perchloride of mercury lotion or with a sterile normal saline solution. In the case of recent foul wounds with extensive laceration and bruising, its action is perhaps seen to best advantage. The following notes of such a case illustrate this very well.

A man aged thirty was admitted into Guy's Hospital under my care on February 11th of this year. He had been cleaning a window, when he fell forty feet. His forearm was transfixed on a spike of the area railings, and he was suspended upon it. The skin and muscles of the forearm were extensively lacerated along the whole of its length, and portions of his coat, which was very dirty, were embedded amongst the pulped muscles. Such portions of the muscles as were very much mashed and dirtied were removed. The ulnar artery was uninjured. The damage to the soft parts was so extensive, and the fouling so considerable, that I believed that, however thoroughly the parts were washed with germicidal lotions alone, amputation would become necessary at no distant date. Therefore, after cutting away some parts, cleaning up others, and removing any foreign materials present, gauze, saturated with an emulsion of sulphur and glycerine, was introduced everywhere in and between the lacerated tissues. At the end of twenty-four hours this was removed, when the wound was found to smell strongly of sulphuretted hydrogen, and the tissues were covered with a soft black slough. Irrigation with dilute perchloride of mercury solution was used daily, and the intervals in and between the lacerated muscles packed with cyanide gauze. The slough soon separated, leaving a healthy granulating surface. The highest temperature recorded was 100·6° F. in the evening following the operation.

I have little or no doubt in my own mind that such a result could not have been obtained by the germicides in general use. In the case of lupus no application, in my experience, is so perfectly satisfactory in its results as sulphur, whether employed in its most active form as the powder, or more gradually, in the form of an emulsion or an ointment. In every case in which I have used it, cure has rapidly resulted, with practically no destruction of tissue other than lupoid. In the case of cancerous or sarcomatous ulceration, the destruction of the soft parts can be regulated and determined very accurately. Unlike the escharotics in common use, it has practically no effect on healthy cutaneous or mucous surfaces, but requires the action of a granulating or raw surface to determine the formation of sulphurous and sulphuric acids, which are apparently the agents which influence the vitality of the organisms and tissues with

which they come in contact. I have also found sulphur most useful in the foul ulcerative stomatitis which is so common among the children of the poor, and which resists so obstinately such local treatment as is usually adopted. In such cases, if gauze or wool be dusted abundantly with the finely powdered drug, and this be retained in firm contact with the foul ulcerated surface for an hour or two, sufficient destruction results to clear the surface of its infective organisms, and it then heals rapidly. Should one application not produce a sufficient result, a second or even more may be required, the number depending on the extent and locality of the ulceration, the facility with which the plug can be retained in position, &c. Also in the foul impetiginous ulcers in children, the application of sulphur is similarly most effectual in the destruction of the micro-organisms producing these conditions. I might multiply very largely similar examples of the good results that may be obtained by the action of sulphur used in this manner, but I think that I have given enough to induce other surgeons to give it a good trial. Sulphur, like iodoform, becomes active as a germicide, and is very considerably more powerful in its action than iodoform only when in immediate contact with a raw surface, the living tissues causing it to form certain combinations with hydrogen and oxygen.—*The Lancet, April* 7, 1894, *p.* 859.

35.—ON THE EXTIRPATION OF ANEURISMS.

By Joseph Ransohoff, M.D., Surgeon to the Cincinnati Hospital.

The acknowledged advantage of the Hunterian operation is its simplicity. It is performed in parts undisturbed in their anatomical relations. It is formal and quickly accomplished. The wound is easily kept asceptic, and the recovery is rapid. That the operation is made in a more healthy part of the artery is largely assumption. In traumatic aneurisms, and in those of arterio-venous character, this view is clearly untenable. In the idiopathic variety the danger of meeting the dreaded atheroma, the supposed source of secondary hemorrhage ought certainly to increase as the heart is approached. Bowlby and C. O. Weber failed to find it oftener just above the aneurism than at a distance above it. Furthermore, the danger of gangrene increases with the stretch of artery cut off from the circulation between the aneurism and the point of ligation. For these reasons the beneficent influences of modern wound-treatment have failed to decrease the mortality of aneurisms treated by proximal ligation according to Hunter as much as was expected.

While it is true that in 1881 Stimson was enabled to collect in New York twenty-nine cases of ligaturing of the principal arteries with catgut without secondary hemorrhage and with but one case of gangrene, statistics drawn from wider sources are not nearly so favourable. In 1885 Scriba tabulated ninety-six cases treated antiseptically; twenty-four of these terminated fatally; seven through sepsis; seven through secondary hemorrhage; in four through hemorrhage from rupture of the sac; in two through gangrene; in one through embolism of the middle cerebral artery; and in three from unknown causes. In eight additional cases amputation had to be resorted to for gangrene of the extremity. Delbet places the mortality of proximal ligation at 18 per cent.

The presence of the sac after the Hunterian operation is a menace to the limb. By a too rapid establishment of the collateral circulation soft clots may be washed into distal branches, thereby producing localised patches of gangrene. Bardeleben detected this blocked condition of the vessels after the ligation of a healthy femoral artery for popliteal aneurism. Months after ligation trophic changes from implication of nerves in the sac wall may necessitate amputation.

Proximal ligation for aneurism always entails uncertainty concerning the finality of the cure. In not a few cases recurrence ensues after a few months or many years. Davies-Colley, Annandale and Hutchinson have reported cases in which the aneurism returned three, four and seven years after a supposed cure had been effected. In forty cases of total extirpation collected by Kubler the Hunterian operation had been done in five. It is particularly in traumatic aneurisms of arteries with generous anastomoses that there is danger of recurrence or of secondary hemorrhage after proximal ligation. The glories of the Hunterian operation probably belong to the immediate past.

In recent years attention has, therefore, centred in the old operation of Antyllus as revived by Syme. It comprises the splitting of the sac, the removing of clots and the ligation of the artery above and below. By the use of the tourniquet the chief danger, that from hemorrhage during the operation, has been almost removed. The sources of failure are in the sac itself. It is virtually a foreign body, remaining in a large and irregular wound. Deprived of its nutrition, suppuration and sloughing are often unavoidable. In the course thereof secondary hemorrhages may be expected. A further source of this bleeding is in the many vessels which are within the walls of and open into the sac itself. They are the *vasa vasorum* enlarged by the development of an anastomotic circulation in consequence of operative measures like digital compression or ligation, or

from the unaided efforts of nature to overcome the disastrous effects of the diseased vessel on the nutrition of the parts below. Notwithstanding these defects of the method under consideration, its mortality is decidedly less than that of proximal ligation. Delbet places it at 11 per cent. Scriba has collected thirty cases, of which only three terminated fatally. One of the unsuccessful cases should be excluded, since the operation was limited to the splitting of the sac and tamponing with perchloride of iron. In two of the cases only did gangrene occur. The danger from gangrene is placed by Delbet at a little less than three per cent., whereas for proximal ligation it is nearly eight per cent.

Favourable as are the results from the Antyllus operation, they do not equal those obtained from the total extirpation of the sac, an operation to which attention has recently been directed by Scriba, Delbet, Trelat and Kubler, to whose experiences I am largely indebted for the views herein expressed. Practised by Philagrius of Macedon in the fourth century, it was forgotten until the end of the seventeenth, when it was resorted to with success in a brachial aneurism by Purmann. It is generally designated as the operation of Purmann. A method might certainly be called ideal which in forty cases was followed by but one death, and after which gangrene and secondary hemorrhage were not at all observed. The one death resulted from acute anæmia several hours after an operation made by Socin for aneurism of the scalp. In twenty-four of the cases large arterial trunks like the axillary, brachial, femoral and popliteal were involved. In the very latest literature I have been enabled to find four more cases of popliteal aneurisms similarly treated, thus making twenty-eight extirpations of major aneurisms of the extremities without a death.

Of the forty-six cases, including those of Kubler, the four just referred to and the cases above reported, thirty-one were traumatic and fifteen spontaneous. Twelve were arterio-venous, the remainder arterial. The presence of a sac in recent traumatic aneurisms has been questioned. Nevertheless Trendelenburg found one in an injured femoral artery as early as the sixth day. While in such cases of recent traumatic aneurism the mere incision and double ligation may answer, it certainly seems better surgery to insure that retraction of the arterial stumps into the sheath above and below which is so essential to safe occlusion of their lumina. This applies particularly to the distal end from which secondary hemorrhage, if it occurs at all, is more likely to ensue.

The disadvantages of total extirpation are the difficulty of its execution and the danger of wounding important parts to which the sac has formed adhesions. The first of these is nor greater than that which attends the removal of tumours of the same size

with adhesions. Under the artificial ischæmia obtained by the rubber tourniquet, a careful dissection of the sac wall is made through an ample incision. The smaller vessels are ligated as encountered before they are divided. The afferent and efferent vessels are sought, ligated and divided above and below the sac. To accomplish this it may be necessary to divide the sac in its long axis. It is in the dissection of the deeper portion of the sac that the attending vein may be injured. The danger from this accident has certainly been over-rated. From the table of Kubler it appears that the femoral vein was injured in three cases, the popliteal in five, the axillary in one and the brachial in three. In all but one of these the vein was ligated or resected, but gangrene did not ensue. The supposed disadvantage of ligating an unhealthy part of the vessel has already been seen to be largely assumption. Fifteen of the cases were spontaneous aneurisms.

The advantages which make extirpation, in the words of M. Trelat, uttered in the French Surgical Congress of 1889, the operation of the future are manifold. It is radical. It permits of the ligation of all vessels which could give rise to secondary bleeding. The danger from cicatricial contraction of the sac and the consequent involvement of nerve-trunks is averted. The wound, being a clean one, is, like that after the removal of a neoplasm, likely to unite by first intention.—*Annals of Surgery, January*, 1894, *p.* 80.

36.—ON MALIGNANT DISEASE OF THE SPINE.

By Howard Marsh, F.R.C.S., Surgeon to St. Bartholomew's Hospital.

[The following is taken from a clinical lecture on "By-ways in the Study of Diseases of the Spine."]

Primary sarcoma of the spine is very rare ; I will briefly mention two examples of it. They are instructive, for in both an erroneous diagnosis was made and acted upon. They were, in fact, both mistaken for tuberculous caries attended with the formation of angular curvature and abscess, and in both the resulting swelling was cut into in the belief that a collection of matter was to be evacuated. A girl six years of age had, as it appeared, clear symptoms of tuberculous caries of the cervical spine. The head and cervical spine were kept in a fixed position, as movement caused pain. The child supported her head with her hand as children do when they have spinal caries,

and the spine had yielded so that the patient had wryneck. Soon a deep-seated and elastic swelling appeared in the right suboccipital region, which was regarded as an abscess. This gradually enlarged and approached the surface, and, when superficial enough for fuller examination, seemed to fluctuate distinctly. When an incision, however, was made nothing but blood escaped. Subsequently, what was obviously a sarcoma rapidly attained a large size, and the child died in about two months. At the post-mortem examination the left halves of the three upper cervical vertebræ were found to be almost entirely destroyed and replaced by new growth. The second case was that of a young woman, aged 24, who was said to have originally complained of pain behind her left knee when she was 16 years of age, and to have had curvature of the spine at 18. She had always been delicate, but had been able to walk until she was 22. She then moved with difficulty, and complained of pain in her back and sides. Four months before I saw her she became unable to walk. When I saw her she had very marked deformity of the lower part of the lumbar spine, exactly similar to that which results from caries, and excavation of two or three vertebræ. In the left iliac fossa there was a large, highly elastic, tense swelling, which occupied the position of, and presented a perfect resemblance to, an iliac abscess depending on Pott's disease. When the swelling was incised, however, it proved to consist of a large sarcomatous growth. The great rarity of such a case as this, and the exact manner in which it assumed the features of a very common disease involving the same parts, made it, like the one first related, extremely deceptive.

The museum of the hospital contains several specimens of sarcoma of the vertebral column. No. 438A shows a sarcoma in a boy aged 18, springing from the laminæ of the sixth, seventh, and eighth dorsal vertebræ, which, as it grew, destroyed the cord. The patient lived only for six months. In No. 517A the bodies of five vertebræ are extensively destroyed. No. 1130 shows sarcoma of the sixth cervical vertebra on the right side, compressing the cord, in a woman who had primary sarcoma of the uterus, with secondary deposits in the spine, lungs, and pericardium. In No. 1132A sarcoma involved the last cervical and four upper dorsal vertebræ in a man aged 46.

Carcinoma of the spine.—This may be one of the secondary developments of carcinoma of the breast and of other parts also. I recently removed the breast of a patient who, having found a tumour which she was afraid might be cancer, had kept the matter to herself for nine months. During this time the growth steadily increased, and in the last two months she had suffered from very severe pains in her spine at the level of about the

fourth dorsal vertebra and also round the sides of her chest. She had also found great difficulty in walking. When the spine was examined a well-marked angular curvature was found. A woman, aged 43, had severe girdle pains round the lower ribs, and pain in the spine, with weakness of the legs. The pain was sometimes intense, and she moved with difficulty. Evidently serious mischief was in progress. At first sight the case might have been regarded as one of acute spinal caries, but the severity of the symptoms was out of all proportion to the local evidence, for all that could at this period be made out was that the spine was stiff; there was no angular deformity. As it was thought that possibly a new growth was in progress, the patient was asked about any swelling elsewhere, particularly in either breast, but she said that nothing of the kind was present. When further pressed, however, she allowed that she had known of a swelling in the left breast for eleven months. On examination a far-advanced scirrhus was found, together with extensive enlargement of the axillary glands. A few weeks later angular yielding of the spine became apparent, the pain became very severe, the right lower limb and, three weeks later, the left became paralysed, and the patient lost control of the urine and fæces, had large bedsores, and died eight months after the first symptoms were noted from exhaustion.

No. 1129 in the museum of the hospital consists of the upper cervical vertebræ of a man aged 35, who had suffered for eight or nine months from pain in the neck and shoulders, which was attributed to rheumatism. For the previous four or five months an alteration of his gait had been observed; the shoulders were elevated and the neck was shortened. For two months he had been unable to wear a collar. One month before death the limbs and trunk became paralysed. Power in the left arm and leg first failed, and in the course of a few days the paralysis was complete. The urine and fæces were passed involuntarily. The immediate cause of death was paralysis of the respiratory muscles. On examination the second and third cervical vertebræ were found to be almost entirely destroyed by carcinomatous growth. The seat of primary disease is not mentioned. No. 1131 consists of seven cervical vertebræ from a man who died of scirrhous cancer of the breast and secondary deposits in other organs. Five vertebræ are affected with scirrhous cancer. In the first and the last two the cancellous tissue is loaded with the growth, whilst the two intervening vertebræ are almost entirely destroyed. The chief indications of the disease consisted of severe pains like those of rheumatism in the loins and lower limbs. It is not stated whether any paralysis occurred. No. 2540 shows a soft brain-like carcinoma, projecting from the left side of the cervical spine from the fourth to the sixth

vertebra. The growth is attached to the posterior surface of the dura mater. A portion of the fourth vertebra is infiltrated and softened. The disease was secondary to carcinoma of the pancreas. The patient was a man, aged 46, who came under the care of Dr. Ormerod in July, 1879, complaining of constipation and abdominal pain. He had already had pains in the left shoulder, and in the previous week had lost power in his left arm. This pain and loss of power in the arm increased, and the muscles became atrophied. He had numbness in the fingers, and quickly lost flesh. Two months later he began to lose the use of his right hand, and complained of pain in the right biceps. In a few days both his legs became paralysed, and the paralysis extended and became complete in all parts except the right arm. The respiration became embarrassed, and he died in about four months after his symptoms were first observed. The tumour remained deeply seated, and was not noticed till the post-mortem examination was made.

The symptoms of malignant disease of the spine bear, at first sight, a very close resemblance to those of acute Pott's disease. The deformity which occurs is the same, and pain in the column and in the course of the intercostal nerves is also similar in the two affections; yet a closer study will usually disclose certain differences which are sufficient for a correct differential diagnosis. In the first place, pain is generally much more severe from the first — altogether a much more prominent symptom — in malignant disease than it is even in the most acute cases of Pott's disease. In some cases it amounts to agony. Secondly, the disease advances much more rapidly than caries, so that deformity generally makes its appearance very early—in the course of a few weeks—and then rapidly increases. Thirdly, paralysis, at first of a single limb, or even of a single group of muscles, but soon becoming extensive, is very commonly present within the first few weeks, and instead of tending to pass off, as is the case with paralysis due to Pott's disease when the spine is placed at rest, in malignant disease it tends steadily, and often rapidly, to become worse and worse. Fourthly, incontinence of urine and fæces is soon developed, and bedsores quickly form. Fifthly, the patient, instead of improving and gaining flesh, as is the case when he is placed at rest for Pott's disease, rapidly loses flesh and becomes feeble and cachectic. Sixthly, the course of the case is a steady and usually a rapid progress from bad to worse, so that, speaking generally, the patient does not survive for more than six or eight months. Lastly, there is in many cases evidence of primary carcinoma in the breast or elsewhere, a circumstance which in any doubtful case he who would avoid mistakes must obviously be determined not to overlook.—*The Lancet, September* 30, 1893, *p.* 792.

37.—ON SEPARATION OF THE LOWER EPIPHYSIS OF THE FEMUR.

By Jonathan Hutchinson, Jun., F.R.C.S., Assistant Surgeon to the London Hospital.

There is no epiphysis of so much importance in practical surgery as the lower epiphysis of the femur. The grave results that have often followed its detachment, including injury to the popliteal vessels, suppuration involving the knee-joint, and arrest of growth have led surgeons from the time of Sir Charles Bell to devote special attention to it; and I have collected records of no fewer than 75 cases, of which 10 have not previously been published. The anatomy of the epiphysis is so well known that it need hardly detain us. We may only recall the facts that the epiphysis includes the whole articular surface, and that its separation must inevitably imply injury to the synovial membrane, that the adductor tubercle is placed exactly at the upper limit of the epiphysis, and that both heads of the strongest muscle in the leg—the gastrocnemius—are attached to the latter in great part. Hence the marked tendency to backward rotation of the epiphysis in cases of complete separation and the necessity for the use of an anæsthetic before attempting reduction. Theoretically we might expect separation to occur even beyond the twentieth year; out of 50 cases three of the patients had attained that age, the average being 10 years. The remarkable breadth of the femur at the epiphysial level and the great strength of the periosteum are circumstances which lessen the frequency of this accident. On the other hand, the attachment of the gastrocnemius, the popliteus, and the exceedingly strong ligaments of the knee almost entirely to the epiphysis favour its occurrence when a sudden wrenching force is brought to bear upon the leg. And it is nearly always a complicated and very violent force that has caused the separation of this epiphysis, such as hyper-extension with twisting or traction. Direct violence may suffice when the knee is run over, and it is remarkable how many cases have been due to the leg getting caught in the spokes of a wheel.

As is the case with the lower epiphysis of the radius and the upper one of the humerus, separation is remarkably clean, occurring exactly at the epiphysial disc, and a division of the condyles by a vertical split is a rare complication. The epiphysis may be completely separated, and yet retained in place by the periosteum, as shown in one of my own specimens; how often this happens without being diagnosed we can only surmise.

When the diaphysis is forced through its sheath the varieties of displacement are many, though in the great majority of

cases the epiphysis is carried forwards, and the danger of stretching the popliteal vessels over the broad diaphysial end is only too obvious. It is probable that in many of these cases the periosteum in front is not torn. Next in frequency to the displacement forwards of the epiphysis comes a lateral one, especially in the outward direction, sometimes so extreme that the leg and thigh form a right angle when seen from in front, or the deformity may resemble that of severe genu valgum. The epiphysis may be rotated on itself as well as laterally displaced, and in one remarkable case operated on by Mr. Atkinson, of Leeds, it was displaced right in front of the diaphysis, and so twisted that one condyle lay vertically above the other. In one reported by M. Trélat union occurred with the epiphysis rotated through 90 deg. on a vertical axis.

In order to explain the frequency with which displacement has been allowed to remain, or with which a wholly wrong diagnosis has been made, we must remember that the knee-joint may be distended with blood and synovial fluid, and there may be much swelling of the soft parts at the time the patient is seen by the surgeon. Not infrequently the diaphysial end has been mistaken for the condyles and a dislocation diagnosed, even in compound cases. One thing is, however, certain, that a correct knowledge of the pathology of separation of this epiphysis would have saved the patient and surgeon from many a disastrous mistake. The gravity of the lesion is best shown in an analysis of recorded cases. Taking first those uncomplicated by wound, out of 28 cases, 16 were got into good position and recovered with very useful or perfect limbs (the possibility of ultimate shortening is not now considered), whilst of the remaining 12 in which perfect replacement was not obtained, 6 were followed by sloughing or suppuration. In 4 of these amputation had to be performed, 1 recovered after excision of the knee, and 1 after resection of the diaphysial end. In one case a popliteal aneurism formed twenty years after, and led to amputation. The remaining cases recovered with more or less useful limbs, the displacement persisting. The cases complicated from the first with wound and more or less protrusion of the diaphysis gave still less favourable results. Out of 30 cases, 4 died from shock, &c., in 8 reduction was more or less effected, with 4 subsequent amputations and 3 deaths from pyæmia. The remaining case recovered after suppuration and some necrosis—a truly dismal record. In 13 cases amputation was performed soon after the injury, with at least 3 deaths (in one the limb was removed at the hip-joint).

In favourable contrast to this list, which is anything but creditable to surgery, are the cases in which the protruding end of the diaphysis was cut off and replacement effected, five in

number, all of which recovered with useful limbs. It may be said that after resection of the protruding diaphysis all growth at the affected part will cease. This is by no means certain, and the following case, proving the contrary, is of such interest that a brief quotation will be excused.

A boy, aged 8, in climbing behind a carriage, had his right leg caught in the wheel. When examined by M. Delens the diaphysis protruded through a wound on the outside of the popliteal space. Prolonged efforts at a reduction under chloroform failed on two occasions, but after the end of the bone had been sawn off replacement was easily effected. At the end of a fortnight the splint had to be removed on account of an abscess forming; this was drained and slowly healed. At the end of fourteen weeks good union had occurred, but with some stiffness of the knee and 4 centimetres shortening. He was repeatedly examined during the next ten years, and at the age of 19 the joint was freely movable, and the shortening amounted only to 9 centimetres. This proves that a considerable amount of growth had occurred at the lower epiphysial disc, since the failure amounted only to 5 centimetres in the ten years.

Unfortunately, we have but few records of cases, whether single or compound, which were followed up a sufficient number of years after the accident to enable us to estimate the risk as to arrest of growth. I can only adduce five :—

1. A girl, aged 14. Severe injury to knee, treated for twelve months in the Sainte Eugénie Hospital by Marjolin. Nature of the accident apparently never diagnosed. Recovered with stiff knee, displacement of epiphysis inwards and forwards, and shortening at the age of 18 of $4\frac{1}{2}$ centimetres.

2. A case of Mr. Chauncey Puzey's. Injury at 16; outward displacement of the epiphysis—reduced. Perfect recovery. At age of 19 there was 1 inch shortening.

3. A lad, aged 12, under my own care, with very marked forward and lateral displacement of the epiphysis, the diaphysis pressing on the popliteal artery so as to almost stop the pulse. Reduction under anæsthetic. M'Intyre's splint. Perfect recovery. When seen last, one year after the accident, there was no shortening whatever.

4. A medical student whose knee was severely injured at football when aged 15. When I examined him at the age of 23 there was fibrous ankylosis of the knee with $1\frac{1}{2}$ inch shortening.

5. Delens's case, already quoted.

My impression is—but, unfortunately, it is only an impression—that most cases of separation of this epiphysis, if properly reduced with as gentle manipulation as possible, recover without any ultimate arrest of growth. Before attempting to reduce the displacement it is absolutely essential that muscular spasm

should be prevented by thorough anæsthesia, the knee should be flexed and then traction and direct pressure brought to bear on the epiphysis. If the case be compound the wound should be enlarged if necessary and the surgeon's finger should ascertain what is the exact cause of the difficulty. If, as is most probable, this lies in interposed muscles or in the periosteal sheath it may be necessary to hook the former aside or to enlarge the aperture in the latter vertically. The end of the diaphysis should be carefully cleaned, but no strong and irritating antiseptic solution used, for in at least one case they seem to have been responsible for subsequent sloughing. Tenotomy of the tendo Achillis should be performed if the main obstacle is the backward tilting of the epiphyses, and certainly when reduction has been effected the best splint to use is a carefully padded M'Intyre's one, flexed to an angle of 135 deg. Inflammatory reaction should be combated by iced compresses to the knee. Good union is to be expected in from four to six weeks. Finally if displacement recurs directly the surgeon relaxes his pressure I believe that it is quite justifiable to fix the ends with a steel peg traversing the diaphysis from one side, being careful not to pass it through the epiphysis into the knee-joint. Rather than employ violent efforts at reduction protracted through one, two, or more hours (as has been done with bad results) it is better surgery to resect the expanded diaphysial end. Is it ever justifiable to excise the knee-joint? The results in the cases thus treated are a sufficient answer to this question. Out of 4 cases only 1 recovered with a firm and useful limb, all growth, however, being completely arrested at the knee.

As regards injury to the popliteal vessels the circulation may be arrested and the leg cold from pressure on the artery and yet recovery takes place when the diaphysis is got into place, as happened in a case under my own care. But if the artery or vein be torn or completely thrombosed, gangrene is almost certain to follow, and primary amputation is probably the wisest course.—*British Medical Journal, March* 31, 1894, *p.* 671.

38.—A CLINICAL LECTURE ON IMPROVEMENTS IN THE TREATMENT OF TALIPES EQUINO-VARUS.

By Richard Davy, F.R.C.S., Surgeon to the Westminster Hospital.

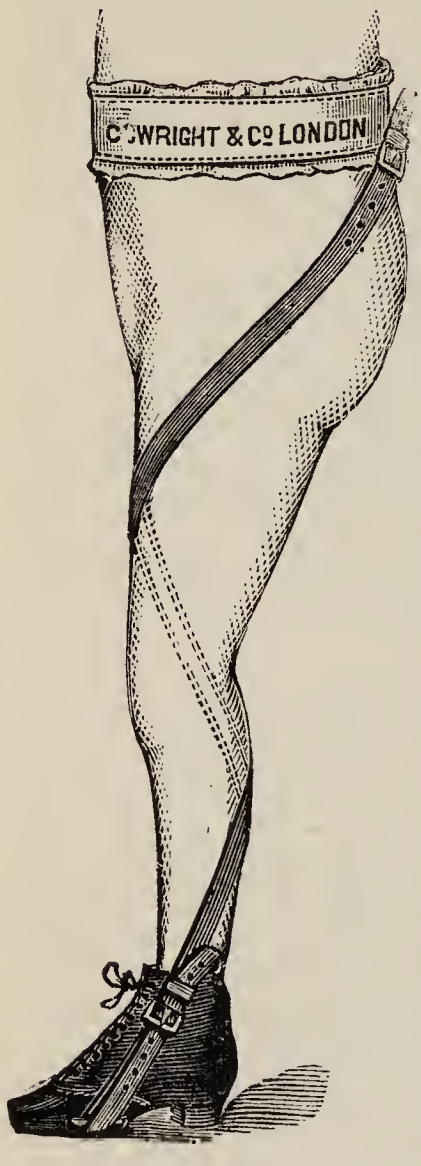
In our orthopædic department you hear mothers advised to carry out gentle manipulations themselves on infants until they are weaned and have at any rate some control over the bladder

and rectum. This is good advice, for if the case is a simple one benefit results ; if a severe one, the mother has the satisfaction of doing something for her child in the right direction, whilst the surgeon is spared the mortification of seeing his handiwork spoilt or ruined by the soiling of retentive bandages and resultant sores. So soon as this delay, which is necessitated by the stern edict of cleanliness, has been obviated, you cannot set to work too briskly, for as the twig is bent so will it grow, and the daily experience of orthopædic surgery proves that delays are dangerous. I wish to particularly direct your attention to a difference in procedure necessary in osteotomy as compared with tenotomy operations—viz., the time of attack on the tendo Achillis ; the equinus part of the deformity had better be undertaken first and not last, as has been for many years taught. Why this change from last to first? My answer is that in cases of sufficient severity to warrant an osteotomy the very introduction of tarsotomy has forced this alteration, because you require as a base of your operation on the tarsus that the os calcis should be so far as possible in a normal position ; moreover, the elongated tendo Achillis lessens spasm on the divided tarsus in just the same fashion as it does on an ordinary fractured leg. As there should be no tension after an osteotomy of the tarsus there can be no value in having the tendo Achillis as an agent or *point d' appui*. Before, however, I leave the equinus part of our subject, let me demonstrate to you on this foot a new departure in the treatment. Until the year 1882 a tenotomy operation was a surgical procedure for lengthening an abnormally short tendon ; the tendo Achillis, for instance, was divided, and from three-quarters of an inch to two inches in length was gained. Here, again, osteotomy was given as the advantage of scoring not only in length but also in breadth—in latitude as well as longitude. Let me demonstrate this. I make an incision in a vertical plane through the heel tissues about three-quarters of an inch from the heel and sever the spur of the os calcis, with the tendo Achillis attached to it, from the anterior and major segment of the os calcis. The tendon, although divided, is apparently elongated by the drawing up of the bone ; then by slicing off to the right or left of the major segment and by affixing the spur to this freshened right or left osseous bed the tendon is made to act upon the foot, either to the right or the left, by adjustment and fixation. Surgically the inner adjustment would favour and promote varus, and the outer adjustment would favour valgus. The lateral new position becomes a factor in treatment, the valgus union of bone being planned for varus, and the varus union of bone for valgus. I notice that a transplantation of the tubercle of the os calcis has been advocated recently for the shortening

of the tendo Achillis in talipes calcaneus. I much prefer the excision of a suitable portion of the tendon, and then the suturing of the adjusted ends of the same. The first case of subcutaneous section of the spur of the os calcis instead of subdivision of the tendo Achillis by tenotomy for the relief of talipes equino-varus was performed in this hospital by myself on July 10th, 1883, now nearly ten years ago. This was carried out very much on the same plan as Ogston followed in his genu valgum cases, namely, by a sloping cut and by pushing the part containing the tendon attached to the outer side of the foot. The boy on whom this operation was performed on the left foot did very well and left the hospital on August 12th of that year. My second and third cases were also operated upon in 1883, and they both did well. My fourth case was in 1887. Since then I have adopted the open plan of operating instead of the subcutaneous method, because you can carry out the necessary adjustment and fixation more precisely, and you ensure a greater degree of certainty of bone joining bone, with maintenance of the altered lateral play of the tendon. To prevent the projecting edge of the spur of the os calcis you can vertically split the spur into two unequal parts in the same linear plane as the fibres of the tendo Achillis; then freshen up the outer or inner side of the anterior segment, and fix by sutures or by a straight pin the halves on either side of the corner of the anterior segment of the os calcis.

I will next touch upon the conjoint operation, the consideration of which we left in order that we might consider first the equinus part of our operation. I have been much impressed of late by some excellent results which have been obtained by the conjoint application of tenotomy on the inside and osteotomy on the outside of the same foot. The tendons of the tibialis anticus and posticus are very freely divided on the scaphoid bone by an open wound at a point where they can be seen and felt, for a free division of skin and subcutaneous fat permits these structures to be readily seen or felt; and for the minimisation of scar I generally plan my incision so as to dip into the crease of inversion. The subcutaneous tenotomy of the posterior tibialis tendon is not always easy, and it is not to be accomplished on fat infants, and anything like half measures on any tendon are worse than useless; so it is advisable to carry out absolutely a complete and not a partial division of both the tibial tendons and the adjacent structures, and then forcibly to ascertain to what extent rectification can be asserted. On noticing the furrows on the outer side of the foot you will have a gauge of the amount of bone to be cut out. This wedge of bone need not involve materially any bone, excepting the cuboid. My object in performing an osteotomy here is to

prevent the parts relapsing into their varus position inside by consolidation of the bony structure on the outside. Thus the inner spring segment of the bony arch of the foot is left unimpaired, and the outer sustentative part is but yet further strengthened. The two edges of chiselled cuboid are neatly fixed by a deep silver suture. It is not very easy to insert this suture; I use a tubular bradawl. You must get far back from the edge of the bony cleft and mechanically render the elbowing of the wire at the apex of the fissure as small as may needs be. Try to get as firm a hold as possible, neatly twist and cut the wire, turn down the twist and let it remain. The wound should be dressed and guarded with extreme care and cleanliness; the foot, now supple and tractable, is put into proper position and so fixed. I am partial myself to the plaster-of-paris gaiters for these young patients who are suffering from club-foot. A skilful use of bandages on the part of the surgeon during the traumatic stage of treatment is better than any complicated machine for the feet sold by the mechanician. The child improves, we will assume, and the feet are symmetrical and in good position, but on attempting to walk, and notably so in children, the mother notices that her child inverts either both or one of the feet; this is due to paralysis of the rotators outwards of the thigh, leg, and foot. For many years this condition of things gave much anxiety. instruments were ordered to promote eversion and they were worn and inevitably broken by the children. The mother's life consisted mainly in taking the child to the surgeon or to the instrument maker, or, again, to the bootmaker. I have introduced to the notice of orthopædic surgeons a very useful eversion strap, boot, and pelvic band. The leathern or elastic strap is fixed on the outer and front part of the sole of the boot. It is easily detachable, and it passes up the outer side of the leg around the back of the knee, and along the course of the sartorius muscle and gluteus maximus to the vertebral column, where it is buckled. These straps may be



worn either on the right or left side, or on both, according to the nature of the case. The strap is most efficient, and there are no hinges or steels to break ; the cost is reasonable, and the improved gait is very noticeable. Messrs. Wright & Co., of New Bond Street, manufacture this eversion strap and belt. An elastic band or plain strap maintains the long strap well against the side of the leg and thigh, and it is worn inside the trousers.

Let me advise you, gentlemen, to remember that about three-fourths of the cases of club-foot can be well treated without recourse to any of these severe operations ; for the remaining one-fourth the simpler treatment is useless. Let me emphasise the fact that constant attention to detail is imperative in the conduct of club-foot treatment, which differs in no respect from the careful practice necessary for any case in general surgery.—*The Lancet, October* 14, 1893, *p.* 922.

39.—ON THE TREATMENT OF HALLUX VALGUS.

By J. E. Goldthwait, M.D.

Preventive treatment is, of course, the best for this condition, and consists in keeping the feet in the natural position from infancy ; the arch of the foot should be maintained, especially in persons who are obliged to stand a great deal, and above all, proper shoes should be worn. After the deformity has occurred, the first part of the treatment consists in the removal of the cause ; nothing like a tight shoe should be thought of, a wide and easy one being worn, and in connection with this stockings of good length should be worn. Key suggests having shoes made with a separate compartment for the great toe.

For the correction of the deformity various methods are in use. One of the simplest consists in wearing a piece of felt or roll of cotton between the first and second toes. This presses the great toe into place ; but it has the disadvantage of leaving a considerable space between the two toes, so that when the pad is removed it is easy for the deformity to recur.

A method suggested by Sayre consists in using a linen or buckskin cot made to fit the toe, to which is attached a few inches of elastic webbing, and to this, again, is attached a piece of adhesive plaster to go around the heel. This is retained in place by two other strips of plaster which encircle the foot. This makes a comfortable appliance for use, especially in the acute cases.

Various appliances have been suggested, which would exert more force for correction than the Sayre device, such as hard-rubber, gutta-percha, or pasteboard splints, to which the toe is

bound, so as to pull it back into place. In this class is the Bigg's apparatus which consists of a piece of steel with an opening cut so as to avoid pressure on the bunion, which is

FIG. 1.

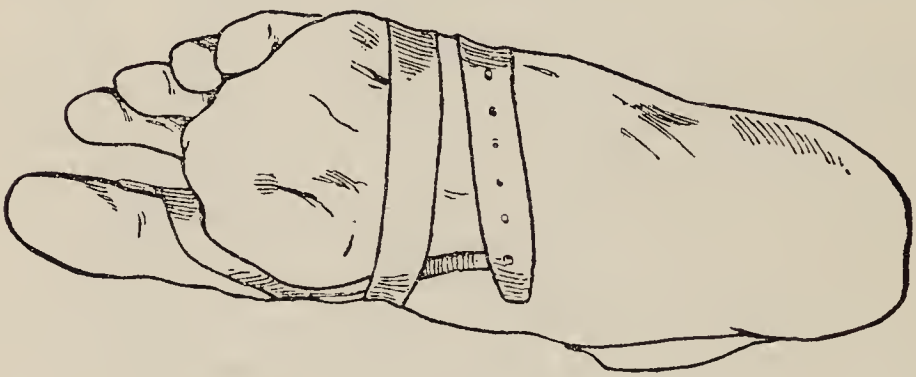


FIG. 2.

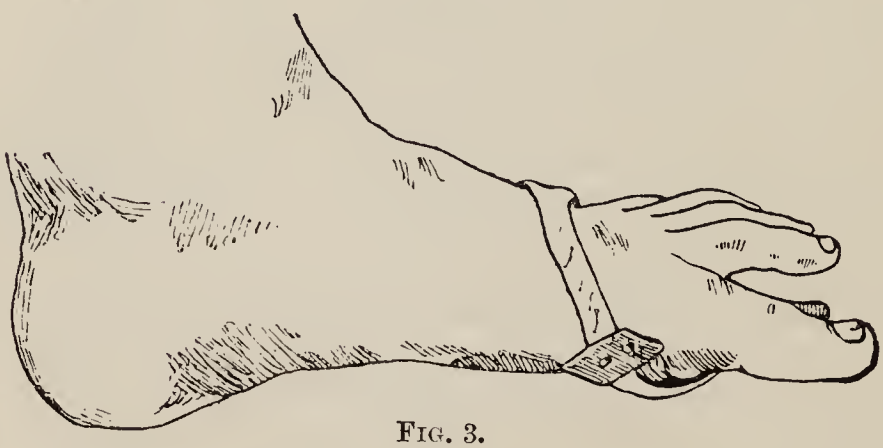


FIG. 3.

fastened to the inside of the foot and the toe pulled up to it. The difficulty with all of these has been to adjust them in such a way that they could be worn without great discomfort.

In order to get something that could be tolerated in walking, and at the same time be efficient in correcting the deformity, I have been experimenting during the summer, and after personal use, offer the two forms of apparatus that are shown in Figures 1, 2 and 3. Both can be worn inside an ordinary shoe, and at the same time exert pressure enough to hold the toe in the correct position. This pressure can be increased from time to time, if it seems necessary, by simply rebending the splint. The appliance is so fitted that no weight comes upon it in walking, the ball of the toe and ball of the foot both being free. The band which extends up on to the dorsum of the foot should be carried back far enough so that the painful joint is avoided, and should then be curved forward nearly to the base of the toes, so that flexion of the foot is not restricted. The long arm which follows the side of the foot in the splint (Figs. 1 and 2) makes it possible to exert more force for correcting the deformity, and also serves to more perfectly immobilise the splint than is possible with the appliance (Fig. 3). Both splints are made of light spring steel, and should be carefully fitted before being tempered. Leather straps encircling the foot hold the appliances in position.

At times there is so much bony change that splints are not sufficient and some bone operation becomes necessary. If there is comparatively little inflammation about the joint and the bone is not very much changed in shape, a wedge-shaped piece may be removed from the head of the metatarsal bone as near the joint as possible and the toe drawn into place and secured by splints and a fixed bandage until the wound has healed. The bursa should be removed at the same time.

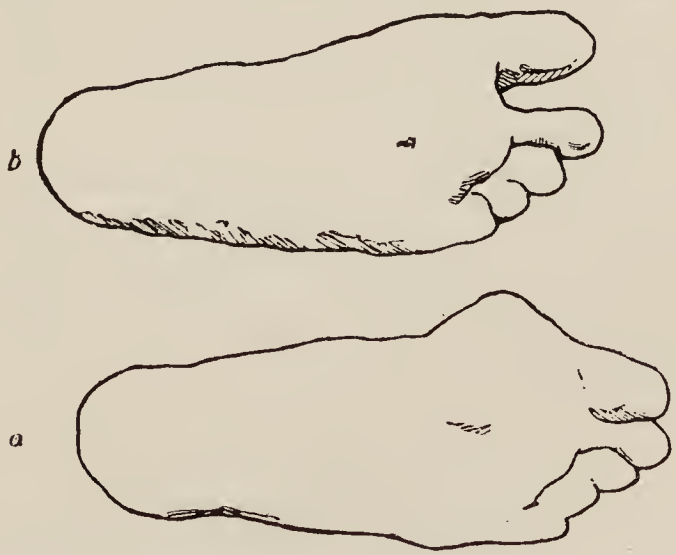


Fig. 4.

I wish here to show the casts of the foot of a patient upon whom I operated, in this way, about two months ago at the

Carney Hospital. The patient was a woman about thirty-five years of age, with the marked deformity (Fig. 4*a*) of the great toe which had existed for many years. A wedge-shaped piece of bone was removed from the head of the metatarsal, and the position corrected, as is shown by (Fig. 4, *b*), which was taken a few days ago.

At times, the change which has taken place in the head of the metatarsal bone is so extensive, and the bone is in such an unhealthy condition that the wound does not heal after the osteotomy, and a troublesome sinus remains. In other cases the thickening is so great that it is readily apparent, that even though an osteotomy were performed, the prominence at the joint would remain and cause trouble. For these cases the operation described by Hueter, which consists of complete excision of the head of the metatarsal bone, is to be performed. The base of the phalanx, with its muscular attachments, is not disturbed. After the removal of the piece of bone the toe is drawn into place and the wound loosely closed, or is allowed to granulate. The bursa should be removed at the time of the operation, as with osteotomy. The results after this operation have been very satisfactory, leaving a straight toe and a very useful foot.

Tenotomy is suggested as a form of treatment, but the cases must be very rare that can be corrected wholly by this method.

Painful inflammation of the bursa may result from the constant irritation, and this may go on to suppuration, and from this a more or less extensive cellulitis may develop. With this there is apt to be marked sensitiveness of the joint, rendering motion very painful, and for this condition rest and poultices or cold compresses are necessary, with possibly incision later on. The joint should be protected by bunion plasters or rings of saddler's felt, and a large soft shoe (or one made after the pattern of the Chinese shoe) should be worn.

Whatever be the operation or whatever the treatment, the importance of wearing proper shoes should not be lost sight of. The sole should be wide, so that the foot may have abundant room to spread out in walking or standing, and there should be plenty of room for the toes to be extended in the line with the metatarsal bones.—*Boston Medical and Surgical Journal, Nov.* 30, 1893, *p.* 533.

40.—ON HALLUX VALGUS.

By John B. Deaver, M.D., Professor of Surgery in the Philadelphia Polyclinic.

In reporting a case of double hallux valgus, in which the deformity has been corrected by subcutaneous osteotomy of the

neck of the first metatarsal bones, I propose to call attention as well to the varieties of this deformity, whether existing alone or in connection with enlargement of a mucous bursa developed in a superficial fascia covering the prominent portion of the head of the metatarsal bone, the result of prolonged pressure (bunion), and to the different forms of treatment.

The varieties of hallux valgus may vary from a slight abduction or displacement outward of the great toe, to a position in which the proximal phalanx is almost at right angles to the metatarsal bone. In the latter variety of the deformity the great toe lies either underneath or on top of the adjoining toes. In the aggravated varieties of this affection the deformity is not bony alone, but there is also a swelling over the site of the metatarso-phalangeal joint due to bursal enlargement. The several conditions that may constitute factors in the production of hallux valgus are the following: That which is the most common in my experience is crowding the feet into too narrow and too short high-heeled shoes. This is unfortunately the popularly shaped shoe. Short and narrow shoes contribute to this deformity by forcing back the last phalanx when the contact with the shoe prevents elevation and consequent flexion of the joint between the proximal and the second phalanx. On account of the resistance offered by the shoe, coupled with the lateral mobility of the first metatarso-phalangeal articulation, the toe is carried outward, or abducted. When any of the remaining toes are subjected to a like pressure on account of the absence of resistance on the part of the shoe, the proximal phalanx is lifted and the first phalangeal joint is strongly flexed, giving rise to what is known as "hammer-toe."

If the foot is forced into a narrow and pointed shoe the points whereon the greatest pressure is produced are the heads of the metatarsal bones of the great and little toes, resulting in the formation of a corn over the metatarso-phalangeal joint of the little toe, while the great toe, on account of its greater lateral mobility, becomes abducted, owing to the pressure on its extremity. This displacement of the great toe forms, to a greater or less extent, an incomplete luxation of the proximal phalanx. The exposed portion of the articular surface of the head of the metatarsal bone, being now no longer in contact with the articular surface of the phalanx, is subjected to continuous pressure, and becomes enlarged from proliferation of bony tissue. If the head of the metatarsal bone is not relieved of the pressure of the boot there will be produced a bursa over the enlarged bone, which not infrequently suppurates, leading to a most painful condition. Bursal fistulæ, consequent upon ulceration of the bursa, are often seen. These, too, may involve the joint, causing inflammation and suppuration. Again, it not

infrequently happens that the synovial lining of the entire joint and also the articular cartilages, undergo change, resulting in an arthritis of a mild or severe degree.

Contraction of the muscles of the great toe, the result of infiltration dependent upon a rheumatic inflammation or of inflammation of the nerves supplying the muscles, may be enumerated as one of the causes of this deformity, yet it must be a very remote one. Another cause may be chronic inflammation of the joint, of the metatarsal bone, or of its periosteal covering, due to traumatism, I believe, however, as I have previously stated, that pressure, either alone or combined with other causative factors, is the chief element in the production of the deformity.

The treatment of hallux valgus will depend entirely upon the degree of the deformity, the amount of discomfort, &c. If seen very early, and the deformity be but slight, it may suffice simply to have the patient wear a properly fitting shoe, by which I mean one with comparatively wide toe and a very low heel, thus avoiding crowding of the toes. A properly fitting shoe should not in any way tend to diminish the transverse diameter of the foot between the heads of the first and fifth metatarsal bones. The use of plasters for protection applied over the projecting head of the metatarsal bone of the great toe, or over an enlarged bursa, is, I believe, capable of doing more harm than good, and in time, with this treatment, the deformity must surely increase, especially if the shoe worn is not very roomy at the toe. The use of appliances, such as devised by Biggs, I believe is equally ineffective. When the deformity is great enough to indicate the adjustment of an appliance I always feel that operation is more strongly indicated.

The operative treatment should consist either of osteotomy of the neck of the metatarsal bone, or excision of the joint. In my experience osteotomy fulfils the indication best in the great majority of cases. When a large bursa is present I dissect it out before dividing the bone. The degree of deformity, so long as there is no great disorganisation of the joint-surface, should not influence the operator against osteotomy, as the deformity can be wholly corrected by this procedure.

In the class of cases in which the proximal phalanx is displaced outward to the extent of making a right angle with the metatarsal bone, the thickest osteotome should be used, so as to have incision as nearly V-shaped as possible, thus allowing the toe to be brought into a position of strong adduction.

In performing osteotomy the foot is rendered bloodless by the application of an Esmarch bandage and tube. The incision through the soft parts, including all of the tissues down to the bone, is carried over the neck of the bone along the inner side of the foot. The foot, as in osteotomy of other bones, is made to rest on a small bag of sand.

The bone having been divided, the wound is closed with catgut sutures, and dressed with the ordinary antiseptic dressing. The great toe, being strongly adducted, is held in this position by a straight splint with a hole at the base to fit the internal malleolus and applied along the inner side of the foot. At the end of a week or ten days the splint is removed and the foot dressed with plaster. This dressing is allowed to remain in place for six weeks, when it is removed and the patient allowed to use the foot as before.

Excision of the metatarso-phalangeal joint of the affected toe I perform only in that class of cases in which the joint is positively disorganised, as demonstrated by the presence of physical signs of advanced arthritis. In the milder cases of arthritis arising in connection with hallux valgus recovery will surely follow correction of the deformity by osteotomy. Crepitation, present so frequently in chronic articular disturbances, does not by any means imply a stiff joint when repair shall have become complete.

The more conservative operations that have been advised, such as subcutaneous section of the external lateral ligament of the affected joint, or of the tendons of the adductor or flexor brevis pollicis muscles, I believe, are capable of accomplishing but little in the way of correcting the deformity; I therefore neither practise nor advise them.

Amputation can but seldom be required, as excision in the class of cases in which amputation might seem indicated will, in the majority of instances, be the better operation. The same conditions, however, such as advanced age, the presence of a constitutional diathesis, &c., that, under other circumstances, make amputation preferable to excision, must be carefully considered.—*Medical News, January* 13, 1894, *p.* 39.

NERVOUS SYSTEM.

41.—THE TREATMENT OF PARALYSIS FROM POTT'S DISEASE.

By Wharton Sinkler, M.D., Philadelphia.

In many cases of paralysis from Pott's disease all that is necessary to restore the power of motion is to give the patient complete rest, and some cases recover even when only a small amount of rest has been taken. The healing of the bone-disease depends very largely upon rest of the part, and the deformity that results is largely dependent upon the position in which the

patient has been placed during the healing of the caries. In some cases, even after the inflammation of the vertebræ has apparently entirely ceased, paralysis remains in spite of complete rest having been enforced for many months. It is these cases that come under the care of the neurologist, and it is in these cases, I am happy to say, that the most gratifying results are obtained.

While complete rest is a necessary element in treatment, it must be supplemented by other means. The most important of these is extension of the spine by suspending the body by the head. The most satisfactory way of accomplishing this is to place the patient in an arm-chair, while from the back of the chair is a bent iron rod which projects above the patient's head. To the end of this rod is attached the cord from a head-sling. It is a good plan to insert between the head-piece and the iron bar a spring balance, so that the amount of extension may be measured in pounds. The apparatus is one usually employed in these cases at the Infirmary for Nervous Diseases.

The patient begins to have extension for fifteen minutes twice a day, and the amount of traction varies from ten to twenty-five pounds, according to the weight of the patient. The degree of pull is gradually increased and may reach seventy pounds. The length of time that the patient is suspended is increased each day until he sits up with the extension on for three hours at a time. The good effects of suspension are occasionally observed immediately, but sometimes no benefit is seen until after several weeks. I have frequently seen cases that have had rest and spinal jackets, and whose paralysis has remained stationary, yet who made immediate gain after the employment of extension.

Extension is sometimes made while the patient is lying in bed by having a cord and weight passing over a pulley at the head of the bed. This is applicable in children, but in adults the weight of the body is too great to make extension in this way effective.

Suspension after the method of Motschutkowski, of Odessa, in the treatment of locomotor ataxia, is not applicable to paraplegia from caries of the spine, as the patient is usually unable to manage the apparatus, as well as an ataxic, and besides, by this method the suspension can be maintained for only a few minutes.

Some assert that the good effects from suspension are due to the straightening of the spinal column, but it is doubtful if very much elongation of the spine can be effected by this means. Others declare that by suspension the spinal cord is actually stretched. Reid and Sherrington have made some interesting experiments in connection with the effect of movements of the body upon the size of the spinal canal. They arrive at the

following conclusions: First, that when the body hangs freely and vertically from the skull the capacity of the cranio-vertebral canal is at a maximum; secondly, that with the body in this position, when the weight of the trunk and limbs is taken off by lifting and supporting the body vertically there is a diminution in the capacity of the cranio-vertebral canal, but the diminution is a slight one. They also state that it would appear that by suspension the size of the spinal cord is increased in the adult of middle age to the extent of some 100 cubic millimetres.

Althaus thought it probable that in suspension the spinal cord is materially stretched, and by this means some of the adhesions from chronic meningitis are broken down, thus allowing the freer transmission of nerve influence. In a modified form I am disposed to accept this view. I can scarcely believe that by suspension the cord can be stretched sufficiently to break down adhesions; but I think there is probably sufficient traction made upon it to influence the adhesions between the dura and the thickened connective tissue, and that thus absorption of the exudation is promoted.

There is also another probable effect of the extension, which is to relieve pressure upon the nerve-roots.

Counter-irritation is useful in many cases as an adjuvant to suspension, and the best way of making this is by the actual cautery, that of Paquelin being the most convenient to use. Sometimes when, in spite of suspension and counter-irritation, the progress of the case is slow, benefit seems to follow the use of internal remedies that have the power of promoting absorption. I have found potassium iodide useful under these circumstances when given in moderate doses.

Of course, in connection with the means already used, it is of the first importance to improve the general health of the patient by the administration of iron and cod-liver oil, and by giving the best and most nutritious food that can be taken. Massage is a most valuable aid, and it should be practised daily by a person well skilled in its use. By this means the nutrition of the muscles is improved, the circulation is stimulated, and a larger amount of food can be assimilated.

The use of the plaster jacket is of value in connection with suspension, and it is best to have the apparatus cut down in front so that it may be removed at pleasure. When the patient is sufficiently convalescent to go about, the half-tanned leather jacket made by Gemrig is helpful in giving support to the spinal column and protecting it from jars and injuries.

When the paralysis remains stationary, notwithstanding the faithful employment of the means already suggested, the question of surgical interference is worthy of careful consideration. Within the past few years the operation of laminectomy has

been performed in many cases for paralysis from spinal caries. The results of this operation have been so successful that, with favourable conditions as to the general health of the patient, the operation should be advised whenever the paralysis has resistsd the treatment that I have described. The mortality in these operations is comparatively small, and the beneficial effects have been shown by the brilliant operations of Macewen and others.

In my opinion, however, the operation of laminectomy is not indicated in cases in which the paralysis is purely motor. The removal of the laminæ will not relieve pressure, and it is difficult, if not impossible, to remove the exudation on the anterior surface of the cord without injury to the cord itself; moreover, it is not easy to determine beforehand whether the motor paralysis is due to pressure or to myelitis. When an operation is decided upon, the neurologist can aid the surgeon by indicating the point at which the operation should be performed.—*Medical News*, *November* 18, 1893, *p.* 564.

42.—THE TREATMENT OF CHRONIC HYDROCEPHALUS BY BASAL DRAINAGE.

By Alfred Parkin, M.S., F.R.C.S., Senior Assistant Surgeon to the Victoria Hospital, Hull.

I not long ago described a new method of operating for the relief of excessive intra-cranial pressure by the withdrawal of cerebro-spinal fluid from the basal subarachnoid space. The following case was treated by me in the way described, and, as will be seen, with the happiest result.

A child eleven months of age came under my care in April of this year as an out-patient at the Victoria Hospital, Hull. It had a large head, in comparison with which the body looked small, the greatest circumference of the head being 17½ in. The temporal fossæ were obliterated, the anterior fontanelle was large, and the membrane covering it was tense. There was marked separation of the two halves of the frontal bone, and to a less degree of the parietal bones. The eyes were prominent, and the sclerotics were visible above the pupils. The child was fairly intelligent for its age and up to that time had had no fits of any kind, but was always restless and irritable. Sight and hearing were good. The mother gave a history of tubercle on both sides of the family, and said that the enlargement of the head was first noticed when the child was five months old, since which time it had gradually progressed. There was no history of syphilis. The child was treated with mercury and chalk, and later with

iodide of potassium and iodide of iron. On July 18th the circumference of the head had increased to 18½ in. The general condition of the child was not so good; it took little or no notice of anything and was frequently sick. On the 21st the child was admitted into the hospital; it rapidly became worse, so that on the 26th it lay perfectly quiet in bed, never moving its limbs and not uttering the least cry, even when taken up roughly and shaken violently from side to side. The eyes were open and staring; the head was retracted. Food was taken badly, and it vomited twice or three times in the twenty-four hours. The pulse was 84. The anterior fontanelle was very hard and no pulsation was felt through it.

A little chloroform was given, and the under surface of the cerebellum was exposed about one inch below the superior curved line of the occiput and half an inch to the right of the middle line. The bone was easily gouged away, exposing the tense dura mater. After incision of the latter a few drops of fluid came away, but the passage of a probe into the subarachnoid space and gentle raising of the cerebellum allowed the exit of a quantity of clear cerebro-spinal fluid. A horsehair drain was inserted into the subarachnoid space and was brought out at the inner end of the wound, which was sewn up with a continuous suture. On the next day (the 27th) the condition of the child was most satisfactory. The eyes were opened intelligently, and no part of the sclerotics were visible above the pupils. The anterior fontanelle was soft and pulsated. The child smiled from time to time, moved its limbs about, and recognised its mother at once. The pulse had risen to 128, and the temperature, which previously to the operation had been 97° F. for three days, was normal and remained so aferwards. The condition of the child was so different from that of the preceding day that it seemed difficult to believe that it was the same child. The improvement continued, the wound healed by primary union, and the drainage, though never very abundant, was sufficient to keep the intra-cranial tension low, as evidenced by the softness of the anterior fontanelle. The horsehair drain was removed eighteen days after the operation, no fluid having come away for three days before its removal. The child was sent home on Aug. 22nd, and when last seen (Oct. 13th) it was in excellent health. The head was then the same size—viz., 18½ in.; there was no proptosis, the anterior fontanelle was soft and pulsating, and the mother said that the child was much more intelligent than it had ever been and that it was rapidly gaining in weight.

Remarks.—It is now three months since the child was operated on, and so far there has been no indication of any recurrence. I can only ascribe the rapid recovery from what was almost complete coma to the relief of the intra-cranial pressure in the

way described. Repeated aspirations and drainage of the lateral ventricles have been frequently tried with but indifferent results. The mode of operating suggested and more fully descibed by me (*The Lancet*, July 1st, 1893) is extremely easy, and gives ready drainage at a place which in a child is easily kept aseptic. Drainage through the vertebral canal is indirect, takes more time, and interferes considerably with the subsequent stability of the spinal column. It is important that such cases should be relieved before complete coma is present. Any further delay in this case would have been undoubtedly fatal, and the remarkably rapid recovery of the patient and the rise in temperature and pulse-rate all indicate the amount of good done by the relief of the intra-cranial pressure. A temporary relief of pressure by aspiration seems to be productive only of temporary improvement, but a constant drainage for some time is much more likely to produce a permanent result, as it gives time for a re-establishment of lymphatic absorption, which process is undoubtedly interfered with in such cases. There are analogous conditions in cases of serous cysts and hydroceles, where tapping often fails, while constant drainage for some time frequently effects a cure. Whether similar treatment is equally efficacious in acute hydrocephalus I am at present unable to say. So far I have only tried it in one case in which the coma was complete. It can only be said that it promises better than either vertebral or cortical drainage.—*The Lancet, November* 18, 1893, *p.* 1244.

43.—THE OBJECTS FOR WHICH SURGICAL INTERFERENCE SHOULD BE UNDERTAKEN IN CASES OF CEREBRAL TUMOUR.

By Victor Horsley, B.S., F.R.S.

(*a*) *Removal and Cure of the Neoplasm.*—It is obvious that the first object of the operation should be to wholly remove and thus cure the new growth from which the patient is suffering. I do not think we are yet in a position to adequately discuss this point, although it is one of such fundamental importance. I do not know what may be the experience of other surgeons, but personally I have never been asked to operate in any case of glioma in which the symptoms had not become so marked as to make it evident, or at least suggestive, that very considerable infection had already occurred, and in every case of glioma or gliosarcoma that I have removed the tumour has been of such a size as to render it uncertain at the time of the operation whether or no the complete removal had been effected ; and in

such cases ultimately recurrence has taken place. I have, therefore, in cases of glioma considered the question of operation more from the point to be discussed presently, namely, palliation, than cure. But that is only because, under the present *régime*, these cases come far too late to the surgeon, and until we have a case of glioma or sarcoma operated upon under the same circumstances as it would be were the tumour situated in the limbs and not in the brain, it is obviously quite illogical to draw conclusions as to the curability of glioma from statistics drawn from the cases at present offered to the surgeon.

As regards the curability of innocent tumours which are encapsulated, and which shell out, such as fibroma, &c., there is no doubt that they are curable by the operation. As regards the curability of specific infections, as in the case of gummata, I wish to state that in my opinion the reason why gummata are so incurable is that there is always a certain degree of pachymeningitis around them, and that this infection of the meninges is inevitably progressive. Under these circumstances it would appear to me that the only possible mode of curing cerebral gumma is to remove it. I know one case in which life was prolonged for two years, but no cure was effected in consequence of the extension of the pachymeningitic and secondary degeneration changes. As for tuberculous nodules much stress has been laid on (a) their multiple nature ; (b) the difficulty of removing them. As regards the first point : unless there are evident symptoms of two tumours the operation ought to be undertaken, since, as is exemplified in a case in which I removed the tuberculous tumour of the brain in 1886, the patient completely recovered, and later succumbed to tuberculous disease of the genito-urinary tract. The brain six years after the operation was perfectly sound.

(*b*) *Relief of the Classical Symptoms.*—The classical symptoms are severe and often agonising headache, optic neuritis terminating in atrophy and blindness, and lastly vomiting. I wish now to advocate, as I have done before, that the opening of the skull should be undertaken for the purpose of relieving these symptoms especially. This opinion has been contravened by von Bergmann ; I wish to show that it is more than justified by the results, and I may add that it is supported by the wide experience of Keen.

(1) *Headache.*—From observation of a series of cases in which I operated as much with the direct object of relieving intracranial tension as of exploration with the view of attempting the removal of the growth, I have found that in every case the effect of opening the skull has been to remove the headache, and further that in the cases where it was found or known before the operation that the tumour could not be removed, although this

was left to go on growing, the relief from the severe pain persisted until the patient died. I therefore think that the simple and certainly safe procedure of opening the skull should be undertaken in view of the failure of drugs to meet the condition from which the patient is suffering.

(2) *Optic Neuritis.*—Of all the afflictions produced by cerebral tumour, it is hardly possible to conceive any more melancholy than the feature of optic neuritis, and this becomes more important since, as I have already indicated, if in the rare instances where the tuberculous tumour undergoes retrogression the patient may survive for many years completely blind. At the Berlin Congress I pointed out from an observation of five years that the effect of opening the skull was to produce at once a remarkable effect upon the optic neuritis—that the swelling of the discs commences to diminish, and the subsidence proceeds steadily to complete recovery, provided atrophy has not previously begun. The restoration of sight when that has been impaired is one of the most gratifying things to the patient and the greatest amelioration of his painful condition. This was well exemplified in a case of tumour of the temporo-sphenoidal lobe in a patient who presented, besides Wernicke's symptom, &c., extremely severe pain in the head and intense optic neuritis, with almost complete blindness. Exploration in University College Hospital revealed a rapidly growing tumour in the temporo-sphenoidal lobe, quite beyond the possibility of removal, Nevertheless, the patient lived for several months free from pain, and with recovery of sight so far as to enable the patient to enjoy life. In the majority of cases the neuritis usually subsides within three weeks, but if atrophy should have already commenced, in my experience the condition is hopeless. It is obvious that where cerebral tumour may come under observation too late for successful extirpation, de Wecker's operation might be done on the optic nerve to stop the neuritis. But in view of the concurrent and equally important relief of the headache I think it would be best to open the skull by preference.

(*c*) *Vomiting.*—Vomiting in cases of cerebral tumour is of course not a constant phenomenon, but still is a very frequent one. It is clearly dependent directly upon the degree to which the intracranial tension is raised, and consequently as soon as the skull is opened this symptom as a rule ceases. This concludes all I have to say on relief of the classical symptoms. I wish to again draw attention to the fact that there is of course in many cases a recovery of loss of function and a removal of signs of irritation, for example, convulsions, &c. As regards the first point, recovery of loss of power—that cannot be counted as an advantage in cases where the tumour cannot be removed, because in a certain proportion of instances the loss of power is

at first accentuated, sometimes considerably so, and the patient thencefrom gradually returns to his previous condition. In some, however, where hemiplegia was well marked before the operation, there has been fair recovery of power. The removal of excitatory symptoms by the simple means of opening the skull is a very well marked phenomenon, convulsions and fits alike ceasing.—*British Medical Journal, December* 23, 1893, *p.* 1366.

44.—A CASE, DIAGNOSED AS TUBERCULAR MENINGITIS, TREATED BY TREPHINING AND DRAINAGE OF THE SUBARACHNOID SPACE; RECOVERY.

By W. Wallis Ord, M.D., M.R.C.P.,
Assistant Physician to the Victoria Hospital for Sick Children, Chelsea; and

Herbert F. Waterhouse, F.R.C.S., Assistant Surgeon to the same Hospital.

A girl, 5 years of age, was admitted October 23rd, 1893. Up till five weeks previously she had been perfectly well, and had never had any fits or otorrhœa; but about the middle of September she began to suffer from acute pain in the head. She had occasional vomiting, she was very fretful, her appetite was bad, and her bowels were constipated. There was no history of tubercle in her family. When first seen the child presented a dull, heavy appearance; she was very restless, and uttered from time to time a shrill scream. When asked if she felt pain she put her hand to her forehead; she lay with her head bent forward and her legs drawn up. The temperature was 101·6° F., the pulse was 104, regular and weak in volume, and the respiration was 20, regular. There was no lesion discoverable in the thoracic or abdominal viscera. Tache cérébrale was well marked; the knee-jerks were normal. There was commencing optic neuritis in both eyes, being less marked in the right. During the first night she was very restless, constantly screaming. There was no vomiting, but she took food badly. The optic neuritis became more marked. On the night of October 25 she was evidently suffering from great increase of pain. She screamed almost without intermission from the evening of that day until 6 a.m. on October 26. There was no retraction of the head nor vomiting. The pulse at 2 p.m. was 108, regular. She referred the pain to the frontal region.

When the patient was seen again by me at 3 p.m. she was evidently worse. I then asked my colleague, Mr. Waterhouse, to examine her with me. We found the pulse to be wavering in a striking manner. At one time it was 120 per minute and regular, on a second occasion it was 70 per minute, with several intermissions, and two or three minutes later it was 80, with no intermission. The respiration was regular, but inspiration was long-drawn. The child was lethargic and apathetic, except for the typical hydrocephalic cry she uttered at times, and she lay on the left side with the lower limbs slightly flexed on the abdomen. She had the appearance of one rapidly passing into a state of coma. The abdomen was retracted, the face was pale, and the tache cérébrale was well marked. The temperature was 101 deg. On examining the eyes we found that the pupils had been dilated with homatropine, and therefore no account can be given of their size and mobility, but the notes stated that they had been contracted on admission, and had become more dilated before the homatropine was instilled. There was no ptosis or strabismus as far as could be ascertained. Upon ophthalmoscopic examination optic neuritis was found, being marked on the left and less marked on the right side. The ears were examined, and the membrana tympani was seen to be healthy on both sides. We agreed that the child was suffering from tubercular meningitis, that there were distinct signs, as evidenced by the great pain and optic neuritis, of increased intra-cranial pressure, that the child was rapidly approaching the stage of coma, and that, if such pressure should be unrelieved, there was every probability of death taking place in a few hours from compression. On these considerations we agreed that an operation for the relief of the pressure was both justifiable and advisable. It was decided to open the subarachnoid space, and to drain this space for a few days. There was some doubt in our minds whether to open the subarachnoid space of the brain or of the spinal cord, but eventually it was decided that the opening should be made into the cranial cavity, and we feel convinced that this was the right decision. Accordingly at 5 p.m. the child was placed under chloroform, and, after the scalp had been shaved and rendered aseptic, a curved incision about two and a half inches in length was made over the left cerebellar fossa of the occipital bone, commencing below and behind the mastoid process, passing with its convexity upwards, and ending externally to the external occipital crest. The occipital artery bled furiously and was tied, and the pericranium was raised in a flap corresponding to the scalp flap. There was some bleeding from the torn mastoid vein. A trephine, three-quarters of an inch in diameter, was then applied midway between the external occipital crest and the mastoid process.

The disc of bone removed was placed in warm boric solution. The dura mater bulged tensely into the trephine opening, and no pulsation was observable. The dura mater and arachnoid were then incised, and some thirty drops of a slightly greenish serous fluid escaped. The cerebellum then bulged into the foramen in the skull, fitting it tightly, like a cork in a bottle. A silver probe, the terminal half-inch of which was bent to a right angle with the rest of the instrument, was then inserted between the cerebellum and the arachnoid inwards towards the falx cerebelli. As soon as the latter was felt the probe was rotated, so that the end projected forward into the large subarachnoid space between the cerebellum and the medulla. Some drachms of the serous fluid at once escaped. A drainage tube was then passed along the probe and left in position ; it was found that fluid passed slowly along it. The dura mater was then sutured, and the disc of bone having been cut up into small fragments with bone forceps, these were packed carefully in a mosaic, after the manner of Professor Macewen, so as to fill the foramen, leaving only room for the drainage tube in the centre. The latter was then brought out through a hole made in the centre of the flap ; the flap was readjusted with horsehair sutures, and the wound was dressed with cyanide dressings. The child bore the operation well, and the pulse rose from 80 to 120 on the removal of the fluid.

The after history of the case, largely obtained from notes made by the house surgeon, Mr. C. J. Harrison, was as follows :—"October 26th, 11 p.m. : The child is doing well, and the temperature has fallen to normal. She has been a little sick during the evening, but she has not shrieked or had any convulsive movement.—27th : The child has passed a good night : she vomited twice ; the pulse is 112, and the temperature 99 deg. F. At 6 p.m. the temperature rose to 102·6 deg. The wound was dressed ; the dressings were soaked with blood-stained serous discharge.—28th : The child is sensible, and answers questions ; she has passed a good night. The temperature (2 p.m.) is normal ; it rose to 103 deg. at 6 p.m. At 10 p.m. it was 101 deg. The optic neuritis is less marked than it was before the operation, but it is still more noticeable in the left eye than in the right.—29th : The child is better. The temperature (6 p.m.) is 102 deg. ; she takes food well. The discharge from the wound has soaked through the dressings, which were voluminous, and was serous in appearance ; the dressings were changed.—30th : The patient has slept pretty well during the night. The temperature was subnormal at 10 a.m. The wound was dressed, the dressings being soaked with a colourless discharge, evidently cerebro-spinal fluid. In the afternoon Mr. Holmes Spicer kindly examined the child's

eyes and reported as follows: 'Both discs are in the same condition. A considerable amount of glistening white effusion, extending for some distance from the optic disc, is present. The veins are engorged and somewhat tortuous. No hemorrhages or tubercles of the choroid can be seen.'—November 2nd and 4th: The wound was dressed, the dressings being soaked with serous discharge; the wound appeared healed except where the drainage tube emerged.—6th: The wound was dressed; it appears to be breaking down in parts; the stitches were removed; the child vomited several times during the day.—From November 6th to the 20th the wound suggested strongly a tuberculous infection, with its gelatinous-looking granulations and thin watery discharge. The tube was removed on the 13th. The temperature during this period varied from subnormal to 103·4 deg., rising and falling fitfully.—On the 20th Mr. Spicer reported: 'There is a considerable amount of swelling of both discs, but more in the right than in the left. The margins are indistinct, but there is less of the glistening white effusion than there was when the last note was made.' About this time two small granulations were removed from the wound, but the examination of them by Dr. Arkle proved negative.—27th: During the preceding week the child has improved remarkably. Mr. Spicer reports: 'The condition of the eye is much the same as last week. The top of the disc can be seen with +6 D.' The wound was dressed with boric ointment, and there was very little discharge.—On November 30th the child was apparently quite well. She sat up to her meals at the table in the ward; she said that she felt quite well, and had had no headache 'since she had the chloroform.' The temperature fell to 98 deg. on November 18th, and never rose after that above 98·8 deg. until the middle of December, when the child had an attack of measles, from which she recovered without a bad symptom."

Personally, I had for some years considered that early operation for the purpose of relieving the effusion in cases of meningitis was a method of treatment that should be tried. I think I was originally led to this by reading a passage by Professor Henoch, of Berlin, in a clinical lecture on tubercular meningitis. He says: "I do not regard it as impossible to bring about recovery by opportune treatment at the beginning of the cases, when the tuberculosis is not general but localised, as our main object at this stage is to arrest the commencing inflammation of the pia mater, and to prevent a more extensive exudation, which might affect the cortical substance of the brain."

We think that we may fairly state that this was a case of acute meningitis with effusion, but the fortunate result renders it impossible for us to state absolutely that it was of a tubercular nature. The condition of the child, however, was that with

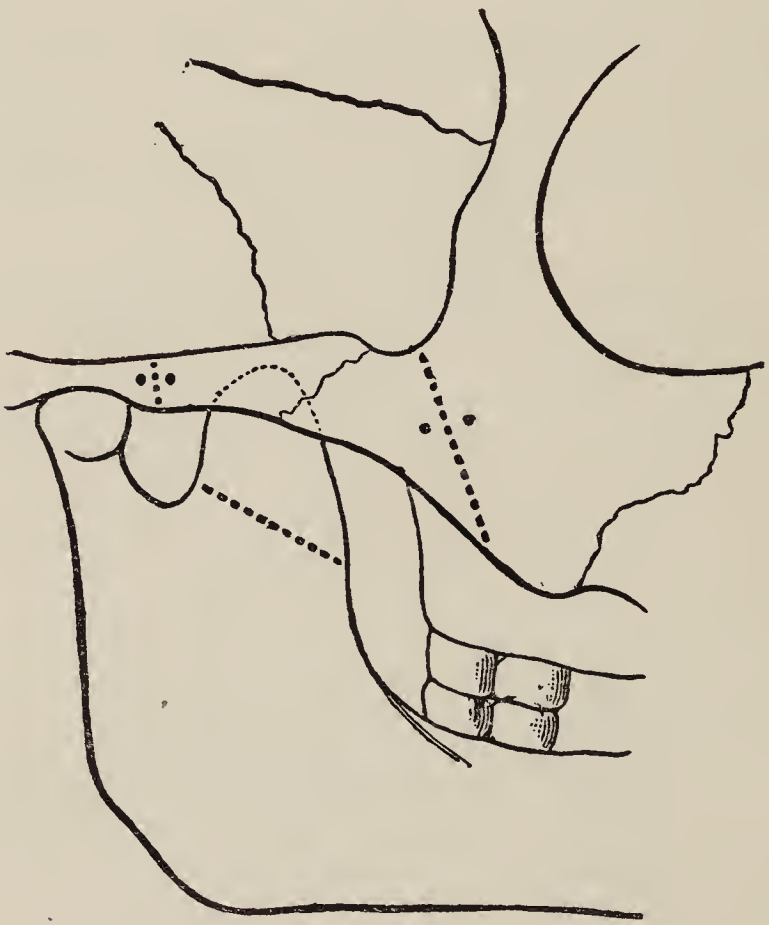
which we are accustomed to associate tubercular meningitis, and there was not one of the eight medical men who saw the case first before operation who did not concur in our diagnosis. In operating early we were guided by the consideration that this mode of procedure should be attempted, if possible, before any marked signs of pressure have become developed, as we consider that the amount of pressure necessary to produce all the classical symptoms may come dangerously near causing permanent cerebral lesion.—*The Lancet, March* 10, 1894, *p.* 597.

45.—NOTES OF TWO CASES OF THE BRAUN-LOSSEN OPERATION FOR TRIGEMINAL NEURALGIA.

By William Rose, M.B., F.R.C.S., Professor of Clinical Surgery at King's College.

Case 1.—A man 59 years of age was admitted into King's College Hospital under my care on November 7th, 1893, complaining of very severe paroxysmal neuralgia on the right side of his face. He was married and had always enjoyed good health. As a rule he smoked about four ounces of tobacco a week; he was accustomed to take a somewhat large quantity of alcohol. The commencement of his neuralgic symptoms dated back to about eighteen years previously, when he was seized whilst at work ploughing with what he considered as a severe toothache on the right side of the face. Two teeth were then extracted, but no relief was obtained. Since that time the pain continued more or less constantly, except during dry or frosty weather, when he was comparatively easy. During the previous eight years he had been three times an in-patient of the Leeds Infirmary, where he had not only the inferior dental nerve stretched and divided, but also the trunk of the third division excised as it emerged from the foramen ovale. The particulars of the former operation have been published by Mr. Mayo Robson. On admission to hospital the patient, a stout, powerful-looking man, was evidently suffering severely, having frequent paroxysms of pain which kept him awake at night; they could be elicited by pressure or any disturbing cause. During an attack the right side of the face and eyelid twitched violently, and the right side of the mouth was drawn up; he seized hold of the side of the face with both hands, and exerted considerable pressure with his fingers, thus relieving the pain a little. The right side of his face was slightly swollen and redder than the other, and the scars of the former operations

were evident. There was an area of hyperæsthesia extending from the right zygomatic arch above to the ramus of the jaw below, and a portion of this area was exquisitely tender. The pain was described as of a stabbing character, commencing in the lower jaw, about one inch external to the symphysis and coursing upwards in a semicircular direction to the outer angle of the orbit. Pressure over the infra-orbital and mental foramina readily induced an attack; and occasionally movement of the tongue, as in talking, swallowing and protrusion of the organ, caused pain in the right half. All the molar teeth on the right side had been previously extracted. The urine was



normal. The patient was seen in consultation with Dr. Ferrier, and it was agreed to attack both the second and third divisions at their points of emergence from the skull. On November 14th the head having been previously shaved and purified with carbolic lotion (1 in 20), an incision was made, commencing at the external angular process of the frontal bone, passing backwards and downwards just in front of the ear over the angle of the jaw, and turning forwards for a distance of an inch and a half on to the cheek. The semicircular flap thus marked out was dissected forwards, the integument and subcutaneous fat

being alone raised, and held across the face by a temporary suture to the upper lip. A transverse incision was then made along the zygoma down to the bone, from which the periosteum was cleared by a rake-shaped raspatory. Two holes were made with an electric drill at each end of the bony arch sufficiently large to carry silver wire, and the bone was then divided between them by saw and cutting pliers (as indicated in the accompanying woodcut). The zygoma could now be detached and turned down, together with the masseter muscle, thus opening up the temporal fossa. The mouth was then partly opened by means of a gag, which had the effect of displacing the temporal tendon slightly backwards, and this was increased by means of a retractor, the spheno-maxillary fissure being thereby laid bare. The tubercle at the junction of the great wing of the sphenoid and of the outer pterygoid process was clearly defined, and was chiselled away so as to enlarge the fissure and give more room for the introduction of a strabismus hook, on which the superior maxillary nerve was hooked up just as it emerged from the foramen rotundum. The internal maxillary artery was not met with, having been probably divided at the previous operation; but although some venous bleeding occurred it was readily controlled by sponge pressure. The nerve was divided close to the foramen rotundum and again at its entrance into the infra-orbital canal, and about a centimetre of its substance was removed, but Meckel's ganglion was not clearly made out. The foramen ovale was now sought for by dividing the deeper fibres of the temporal muscle, but it was not readily reached owing to the great depth at which it was placed. All the structures passing out of it were divided, the bony margins themselves being gouged away to ensure complete interruption in the continuity of the nerve trunk. Owing to the former interference with the structures the tissues were much matted together in this region, and it was impossible to recognise the trunk of the third division. The zygoma was then replaced and kept in position by fine silver wire sutures passed through the holes previously bored at each end, and the wound was closed by a continuous suture, a draining tube being inserted at the upper part for forty-eight hours. A dressing of cyanide gauze and salicylic wool was applied, the right eye being also carefully bandaged. On the night of the operation a small injection of morphia was given and the outer dressings changed as some blood had oozed through. On November 15th it is noted that the patient had slept well, not experiencing a single paroxysm of neuralgia, and no pain at all worth speaking about. There was some slight twitching of the right side of the face. On November 16th the wound was dressed and the drainage tube was removed. There was complete loss

of tactile sensation over the area supplied by the second and third divisions of the trigeminal; the right side of the tongue was anæsthetic anteriorly. The patient could not distinguish between salt, sugar, or quinine when any one of these was placed on it, but over the posterior half taste and touch were unimpaired. Some weakness of the orbicularis palpebrarum was noticed, as also of the muscles around the angle of the mouth on the right side, but all muscular twitching had ceased. From this date an uninterrupted recovery ensued. The temperature never ranged above 99 deg. F.; the stitches were removed on the seventh day, and the wound was then practically healed. He left the hospital on December 5th, having been entirely free from pain for the fortnight following the operation; the muscular weakness had slightly improved.

Case 2.—A gentleman, 65 years of age, was seen by me in consultation with Dr. Ferrier and Dr. Sheldon, of Nottinghill, in October last, complaining of paroxysmal neuralgia affecting the left side of the face and head. The pain had commenced suddenly about seven years ago in the temple, and was so severe as to cause him to jump up and writhe in agony. He had all the teeth, some of which were decayed, removed from the upper jaw, but in spite of this the pain persisted and affected, in addition, the whole of the superior maxillary region. Eating and speaking were both sufficient to induce an attack. In February, 1891, when first seen by Dr. Ferrier, the pain appeared to radiate from the region of the infra-orbital foramen, and the patient never passed a day or night without one or more attacks. He is stated at that time to have been a fresh, healthy-looking, man, whose general condition was satisfactory; the appetite was good, as also the digestion, and the bowels were regular, although on examination the tongue was slightly furred. His habits were regular. The reflexes were distinct and not exaggerated. There was no tenderness on pressure over any branch of the fifth nerve, but during the examination of the patient one or two attacks of pain occurred. A mixture, containing five grains each of iodide and salicylate of soda and antipyrin, was ordered, and the application of the constant current (from five to ten cells) to the face was recommended. This, however, seems to have been of little use, for in October, 1893, the patient returned with all the former symptoms exaggerated, although he had had a slight respite from pain about six months previously. There was no tenderness on pressure over the infra-orbital and malar regions or along the gum, but he invariably referred the starting point of the pain to the zygomatic process of the malar bone (subcutaneous mali branch). His general health was still good. It was decided to offer the patient the prospect of relief by

surgical interference, to which he readily consented. On October 24th the patient was anæsthetised by Dr. Dudley Buxton, and the operation was performed as described above, except that the internal maxillary artery, not having been previously interfered with, was seen as it entered the pterygo-maxillary fissure and was divided between two ligatures. The tubercle on the great wing of the sphenoid having been chiselled away, the inferior maxillary nerve was readily hooked up and Meckel's ganglion was clearly demonstrated. Three-quarters of an inch of the trunk of the nerve was excised, including the ganglion, and there was but little hemorrhage during the proceeding. The foramen ovale was not dealt with in this case. An uninterrupted recovery followed, the temperature never rising above the normal and primary union occurring.

About the middle of February I heard from Case 1 and saw Case 2, and they were then both free from pain and were very grateful for the relief they have obtained. The scar of the operation is scarcely visible, and there is no impairment in the mobility of the jaws. The cheek still remains numb and anæsthetic. I would lay great stress on the method of reflecting the skin-flap, which is a manifest advantage, not only in facilitating the deep dissection, but also in obviating any subsequent deformity of the face through the presence of an unsightly and often depressed cicatrix. Lastly, it must be remembered that, providing all proper precautions are taken at the time of operation, there is no risk of subsequent sepsis, inasmuch as the antrum is left untouched and the wound is well away from such sources of infection as the nose and mouth.—*The Lancet, March* 17, 1894, *p.* 667.

ALIMENTARY CANAL.

46.—ON THE TREATMENT OF CLEFT PALATE.

By Thomas Annandale, F.R.C.S., Professor of Clinical Surgery in the University of Edinburgh.

[The following forms part of a Clinical Lecture upon Hare-Lip and Cleft Palate :]

True cleft palate is a congenital deformity, which may or not be associated with some form of hare-lip. Degrees as to the extent and width of the fissures are met with, and it may involve a portion only or the whole of the soft palate, or the whole soft palate with a portion or the whole of the hard palate.

Treatment.—Congenital fissures of both soft and hard palates may be treated by the application of plates or artificial soft palates, but the closing of them by operation is more satisfactory, provided the patient's condition admits of the operation.

Age for Operation.—If the fissure is confined to the soft palate, the operation may be performed at the age of two years, or even earlier—I prefer the child to be at least two years; but when the hard palate is involved, I am of opinion that the operation should be delayed until the patient is five years or older.

Principles of Operation: A. *Pare the Edges of the Whole Fissure Freely.*—In the soft palate this paring can readily be done, but in operating upon the hard palate it may happen that the edges of the flaps of soft texture may after their separation from the bone not be thoroughly rawed, and may therefore require a further paring.

B. *Loosen Surrounding Soft Tissues by Incision and Separation.*—When the fissure is confined to the soft palate this may not be required, but if there is any tension in bringing the rawed edges together, an incision through the mucous membrane and submucous tissue made parallel to and about half or three-quarters of an inch external to the fissure upon each side will suffice to relieve it. If tension still exists after this procedure any tight muscular fibre may also be divided. When the hard palate is involved, I still advocate the procedure which I first practised in 1864, an account of which, with illustrated cases—the first cases successfully treated in Scotland—was published in the *Edinburgh Medical Journal* for January, 1865. This procedure consists in first paring the edges of the fissure, making an incision on each side close to the gum, and extending from the canine tooth to the last molar and round it, if necessary, and then separating with a periosteal elevator all the soft textures, including the periosteum, from the bony palate, leaving them only attached in front and behind where the palatine vessels enter. In this way the pared soft textures forming the two edges of the fissure can be slid together without tension and sutured. In the same paper I advised that the entire fissure in both hard and soft palates should be united at one time, but cases are occasionally met with in which the soft palate is deficient, and if in such cases the hard palate is involved, it is better to close the fissure in the hard palate only, and supplement the deficient soft palate by a soft rubber artificial one.

C. *Suture the Pared Edges in Position.*—Horsehair or silkworm catgut sutures may be used, but when the fissure involves the whole of the soft palate or hard palate, I employ two or more silver wire sutures with intermediate sutures of horse-

hair. It is always well to insert a silver wire suture at the point where the hard and soft palates join, for the wound here not infrequently gives way a little unless its edges are properly rawed and kept firmly in position by a rigid suture.

Position, Anæthesia, &c.—When operating upon cases of cleft palate, I always have the patient thoroughly under the influence of chloroform and resting upon his or her back, with the head lying over the edge of a table. This position does much to prevent the blood—which often at first flows freely—passing down into the pharynx or air passages. A Smith's or other efficient mouth gag is a very essential aid in performing these operations, and should always be used. As some blood must pass down into the stomach, and may afterwards be either vomited up or passed by the bowel, it is well to warn the friends or attendants of the patient that this may occur.

After-treatment: The principal points to be attended to are to feed the patient with fluid, and soft but nourishing food, such as milk, eggs beat up in milk, and soups, to wash or syringe out the cavity of the mouth several times daily with some mild antiseptic lotion, such as boracic acid solution, and to limit the amount of speaking as much as possible.

The stitches should not be removed for from two to three weeks after the operation, according to the amount of healing of the wound. Some of them usually become loosened, and can then be removed, and it is quite common for one or more of them to give way, leaving a gap. If this gap is not extensive, it gradually contracts and heals, but if an opening becomes permanent it may be closed by the application of a hot wire, or if of some size, by a second operation.

After successful operation for cleft palate, the speech may, for a time, not be much improved, but it always is favourably altered, and the patients find that they can speak with more ease. Careful education in speaking and pronouncing words will much aid in improving articulation.

In conclusion, I may state that, having from time to time been consulted by adult patients suffering from congenital fissures of the hard palate, as to the possibility of improving their speech and making them more fit to take part in public positions, I have always advised a closure of the fissure by operation, and several of these patients have—as advised—been operated upon by me.

My experience of the result in connection with these cases encourages me to advise that, even in adults, the closure by operation of a congenital fissure in the palate enables the patient to speak with greater ease and with greater distinctness, both in private and public life.—*British Medical Journal, December* 2, 1893, *p.* 1198.

47.—ON THE SURGICAL TREATMENT OF PERFORATING ULCER OF THE STOMACH.

By W. F. Haslam, F.R.C.S., Surgeon to the General Hospital, Birmingham.

[Mr. Haslam's paper, from which the following is taken, contains the record of an important case treated after the manner advocated. The patient survived the operation forty-five hours.]

In the cases where the peritoneal cavity is suddenly invaded as the result of perforation of a gastric ulcer, our aim is to close the perforation and cleanse the peritoneum. In cases of localised suppuration due to perforation, the resulting abscess has to be treated on the general principles that guide us in the management of any such localised peritoneal suppuration, whether caused by a perforating gastric ulcer, or by a similar perforation of the vermiform appendix; while in the last division surgical treatment has to be conducted according to the exact nature of each case.

For treatment by operation to be of any avail in the cases now under consideration it is absolutely necessary that it should be undertaken as soon as possible after perforation has occurred; delay of a few hours may make just the difference between success and failure, not only by permitting an extension of the intraperitoneal mischief, but by allowing the patient to get into a condition of shock and exhaustion unfavourable for the proper performance of the operation. It is therefore of the utmost importance that those engaged in general practice, under whose care such cases first come should be keenly alive, not only to the symptoms indicating so grave a peritoneal lesion, but to the necessity of taking immediate steps for its repair.

What, then, is the *technique* of such an operation? Every means must be taken to diminish the shock it will necessarily cause, and to effect this the temperature of the room should be high, the patient's limbs and thorax wrapped in cotton wool and well covered with blankets; and, if the character of the pulse is bad, a brandy enema should be given shortly before commencing. The best position for the incision is above the umbilicus and just to the left of the middle line, so as to miss the falciform ligament. On opening the peritoneum it is possible that positive evidence of perforation will at once be manifest, namely, by there being air in the peritoneum together with fluid from the stomach, causing signs of more or less inflammation according to the time that has elapsed since perforation took place.

In searching for the perforation, and assuming, as seems probable, that it is situated on the anterior surface of the stomach, it is well to bear in mind that the anatomically anterior surface, that is the portion between the attachment of the gastro-hepatic omentum and the great omentum is only anterior in the undistended condition of the organ, and that it becomes, when the stomach is distended and its position altered, practically an upper surface. Consequently, that portion of the organ first met with on opening the abdomen will be at no great distance above its greater curvature—in other words, the lower part of the anterior surface, a position where perforation does not often occur. If this is regarded as representing the whole anterior surface it is very unlikely that an ulcer will be seen, the fact being that the finger must be carried along this surface upwards and to the back until, far away from the abdominal incision, that portion of the anterior surface, near the lesser curvature is found ; here, experience teaches us, ulcers frequently perforate. The practical importance of this is that while we rightly describe the ulcer as being on the anterior surface of the stomach, we must not necessarily expect to find it immediately beneath the incision, for, owing to the alteration in the position of the organ by distension (and the history of many of these cases shows that they often follow a meal), it may be well out of sight, and by no means within convenient reach.

Further, a want of recognition of this fact may account for the statement in some of the reported cases that the ulcer was on the posterior surface of the stomach when from the notes it must have been on the anterior surface, even though its exact situation may have been at a great depth from the anterior abdominal wall. Obviously if perforation occurs through the posterior wall we can only reach it by first forcing a way into the lesser sac of the peritoneum. In the case on which I operated I was surprised to find that an ulcer on the anterior surface could be so far away from the incision and so difficult to bring forward for suturing. Having found the perforation the next step should be the complete removal of the contents of the stomach. This may be effected by means of a large tube and funnel and some warm water. In some cases the already existing opening at the seat of perforation may be sufficiently large to admit the tube, or if not it should be introduced through the œsophagus, the hole in the stomach being closed either by seizing it between the fingers or holding a sponge over it. The advantages of thus clearing the stomach are evident when we remember that it is frequently full when perforation takes place and that the resulting shock at once stops digestion. This quantity of half digested, food, if left, will not only severely test the line of suture but will in course of time cause movement

in the stomach wall or set up vomiting, thus interfering with that complete rest so necessary for repair.

Various suggestions have been made as to the best way to treat the perforation, and while it may not be possible to follow out one plan in all cases we must favour that method which, while it is efficient, will make the least demand upon the patient's power of endurance. The most radical method is to excise the ulcer with its indurated base and then suture up the rent. This plan, however, does not commend itself favourably to me for various reasons :—(1) It necessitates the removal of a considerable portion of the stomach wall, consequently the difficulty of efficiently closing this will be great ; (2) It must cause free hemorrhage, and the patient is not in a condition to stand any loss of blood ; (3) This hemorrhage will cause a waste of valuable time.

Closure of the Perforation without its Removal.—This seems to offer in many cases the most satisfactory plan of treatment. To carry this out, the stomach must be drawn up as near the surface of the body as possible, to facilitate which it may be necessary to enlarge the abdominal incision. In applying sutures, which should be of the Lembert type, we must remember that for a considerable distance around the actual perforation the stomach wall is so indurated that it is impossible to cause sufficient inversion of this part so as to get the peritoneal surfaces in opposition, nor, indeed, will the tissues bear the strain put upon them by the sutures. It is therefore necessary to go outside this area of induration, so as to get a good hold of the stomach wall at a point where it can be drawn over the orifice so as to meet the peritoneum from the opposite side. Three Lembert sutures of stout silk passed in this way in the case I have recorded buried the perforation together with its surrounding induration, and completely shut off the cavity of the stomach from that of the peritoneum. I would suggest, however, that in addition to these deep sutures, some small superficial ones should be inserted in the intervals between them, and that a similar precaution should be taken at each end of the resulting puckering.

Suturing having been effected, our attention must be turned to cleansing the peritoneum, and here the question will arise as to whether it will be necessary to drain the pelvis. Bearing in mind that fluids tend to gravitate into that cavity, and the extreme difficulty there is in being sure that every particle of foreign matter has been removed, it seems probable that, at any rate in most cases, pelvic drainage is desirable. If the operator, therefore, intends to use the drainage tube here, he had better at this stage of the operation make the necessary incision for it. This will also facilitate the thorough flushing of the peritoneum,

which should be carried out in the most liberal way and with volumes of hot water, the intestines being moved about and the current directed in such a manner as to remove, if possible, every particle of the extravasation. There is no doubt that this is a most important step in the operation, and one that must be persevered in as long as the anæsthetist considers the patient can stand it, unless the operator is satisfied before any such prohibition is necessary that sufficient has been done. All excess of fluid should then be removed, the drainage tubes inserted, and the wounds sutured in the usual way. I feel that it is necessary to emphasise the importance of this thorough flushing of the peritoneum, not only from the fact that the chief cause of failure after operation has been suppurative peritonitis, but on account of a somewhat natural feeling on the part of the surgeon that, after the time already spent in finding and suturing the ulcer, the patient's condition will not permit more than a limited amount of flushing, which, while it satisfies the surgeon's conscience, is of no real value.

It is on every ground undesirable to have a patient die either during an operation or very soon after as an immediate result of it. But it must be understood that a clean peritoneum is the patient's only chance, and therefore the anæsthetist must most carefully watch the general condition of the patient, and only stop the surgeon if he considers that further time spent on the operation will prove fatal.

Two other methods of treatment have been suggested, and these may be considered under one heading. By these the perforation is brought to the abdominal incision and fixed there, either by suture or a bone plate, so as to leave a gastric fistula. While such a procedure may be the only possible course to take in some cases, it is hardly the one to follow where a more complete operation can be done, for, if temporarily successful, it necessitates a second operation later on for the closure of the fistula.—*British Medical Journal, November* 11, 1893, *p.* 1044.

48.—ON GASTROSTOMY AFTER THE METHOD OF WITZEL.

By F. M. Caird, F.R.C.S.E., Assistant Surgeon to the Royal Infirmary, Edinburgh.

[Mr. Caird's paper concludes with the narratives of two successful cases of gastrostomy by Witzel's method. In both cases the œsophageal obstruction was due to cicatricial stricture.]

Gastrostomy is usually undertaken when the œsophagus only permits the passage of fluid food with difficulty, and when the

patient's strength is already giving way. The mortality associated with the operation was formerly great, partly owing to the shock consequent on the low vitality at the time, and partly from the contamination of the peritoneum with gastric contents.

An advance was made, however, when surgeons began to advocate earlier interference, and when the operation was carried out in two stages, so that the opening of the stomach was deferred until adhesions shut off the peritoneum. Under the more favourable auspices created by increased familiarity with peritoneal surgery, it was soon recognised that the danger of septic infection might be avoided, and that the stomach might be opened at once, if it were secured with sufficient firmness to the abdominal wall, and the peritoneum perfectly occluded, so that neither was there chance of the stomach breaking loose if vomiting occurred, nor yet the fear of breaking down adhesions when feeding the patient.

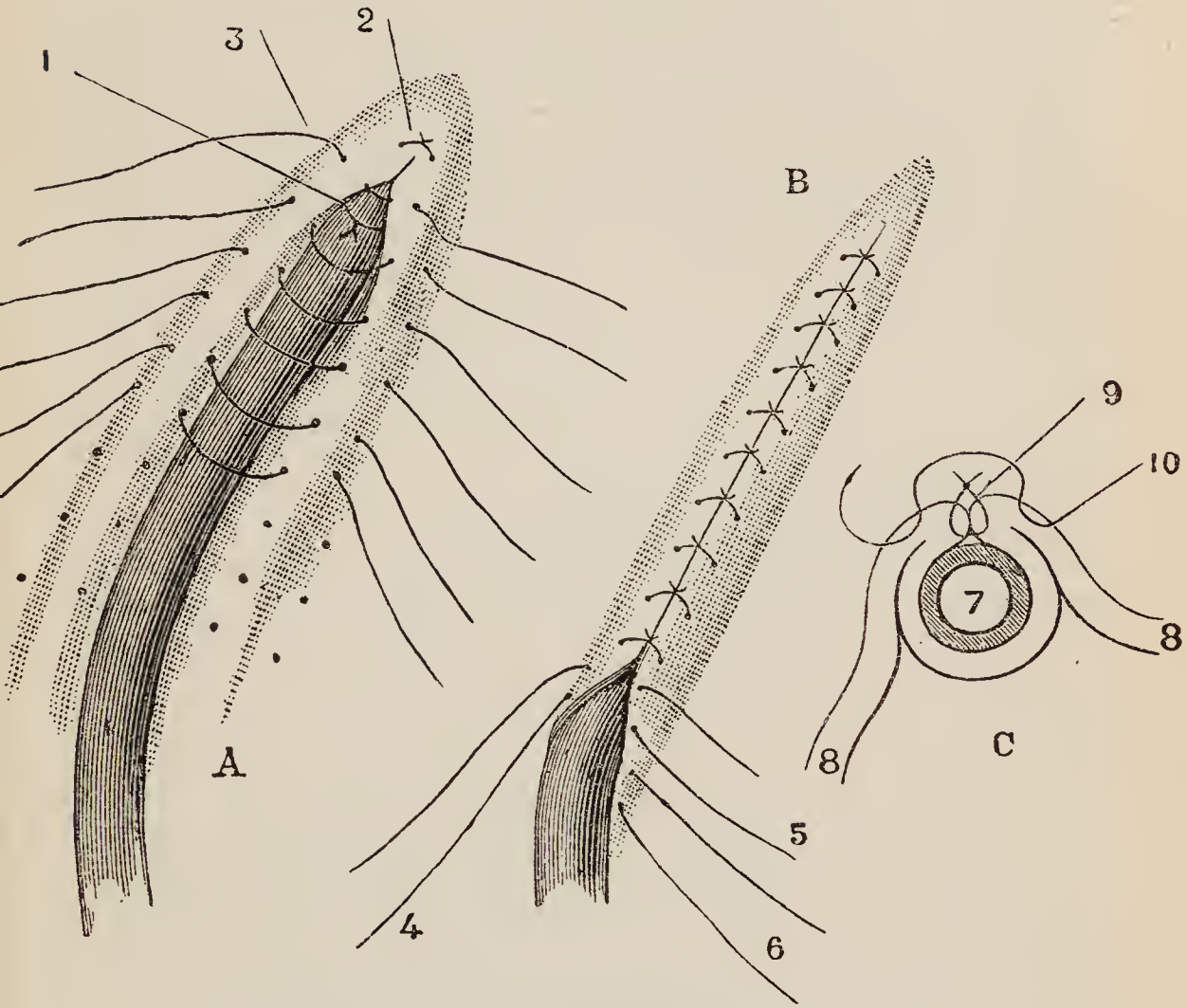
As the result of a successful gastrostomy, the contents of the stomach, fluid and gaseous, were liable to escape; the adjoining skin was frequently excoriated, and the patient was sometimes far from comfortable. Moreover, in cases of simple stricture, if the œsophagus regained its function and became permeable, the closure of the fistula involved subsequent surgical interference.

Ingenious procedures were accordingly devised to perfect a gastrostomy wound which should act like a true mouth, or like a valve, and obviate the distressing leakage. Amongst these may be mentioned the methods of Von Hacker and of Girard, in which a sphincter is formed from the fibres of the rectus muscle; or those of Hahn and Ssabanajew, where, by the projection and opening of a fold or diverticulum of stomach wall between the ribs, or through the soft structures and skin above the level of the original wound, a valve-like mouth is constructed at a higher level than in the ordinary gastrostomy.

It would appear, however, that the most satisfactory plan is that which follows, introduced by Witzel or Bonn.

The patient is anæsthetised, and the customary antiseptic precautions observed. The usual incision is made, the rectus split along the course of the fibres, its sheath and the peritoneum opened. The stomach is then sought for, seized by the fingers, and a portion of the anterior aspect, as large as the palm of the hand, is pulled out at the wound, and packed around with sterilised gauze, moist and warm. The surgeon next opens the stomach. He selects a spot near the lesser curvature, free from vessels, and makes a small incision about $\frac{1}{4}$ inch in length. He has in readiness about two feet of red rubber tubing, in diameter

equal to that of a drawing pencil, and slips about one inch of it into the stomach through the incision, which it accurately plugs. Should there be any excessive bleeding, it may be arrested with the catgut suture, which serves to fix the tube provisionally. Care must be taken to wipe up any escape of fluid from the



Diagrams Illustrative of Gastrostomy after the Method of Witzel.

A. Shows rubber tube passed through slit in stomach, and secured by catgut suture 1. Lembert sutures beyond insertion of tube, 2, 3. The following six sutures are figured in position, but not tightened, and the position of the succeeding three is indicated by dots.

B. Sutures tightened.—Stitches 4, 5, and 6 inserted; the stomach is now returned to the abdomen, and the free ends of 4, 5, and 6 used to unite the stomach to the peritoneum and rectus.

C. Section.—Tube *in situ*, 7. Stomach, 8. Suture of first series, tightened, 9; of second series, loose, 10.

The sutures should be of fine silk, preferably black. If the stomach cannot be easily brought close against the abdominal wall, a provisional tampon of iodoform gauze is used until adhesions form.

stomach. The tube, which hangs across towards the greater curvature, has now to be secured in position, and a species of artificial œsophagus formed. This is managed by the surgeon raising a fold of stomach on each side of the rubber tube with a series of interrupted silk Lembert sutures, on tightening which the tube is buried for about two inches of its length in the folds. Two or three similar sutures beyond the sunk extremity of the tube effectually shut off the new œsophagus from the peritoneal cavity at the further end. A little sterilised iodoform powder is rubbed over the stitches, and a second similar series of sutures are put in over the first to promote the efficient union of the serous surfaces over the tube. The stomach should now be returned, and secured to the abdominal wall. Before returning it, a few loose sutures may be passed through the folds and outer portion of stomach wall at the free extremity of the rubber tube, and on replacing the stomach the loose sutures are employed in fixing it to the abdominal wound, which may now be closed. The surgeon there and then attaches a funnel to the rubber tube, and runs in as much food as he thinks necessary. The whole operation may be easily completed within thirty minutes.

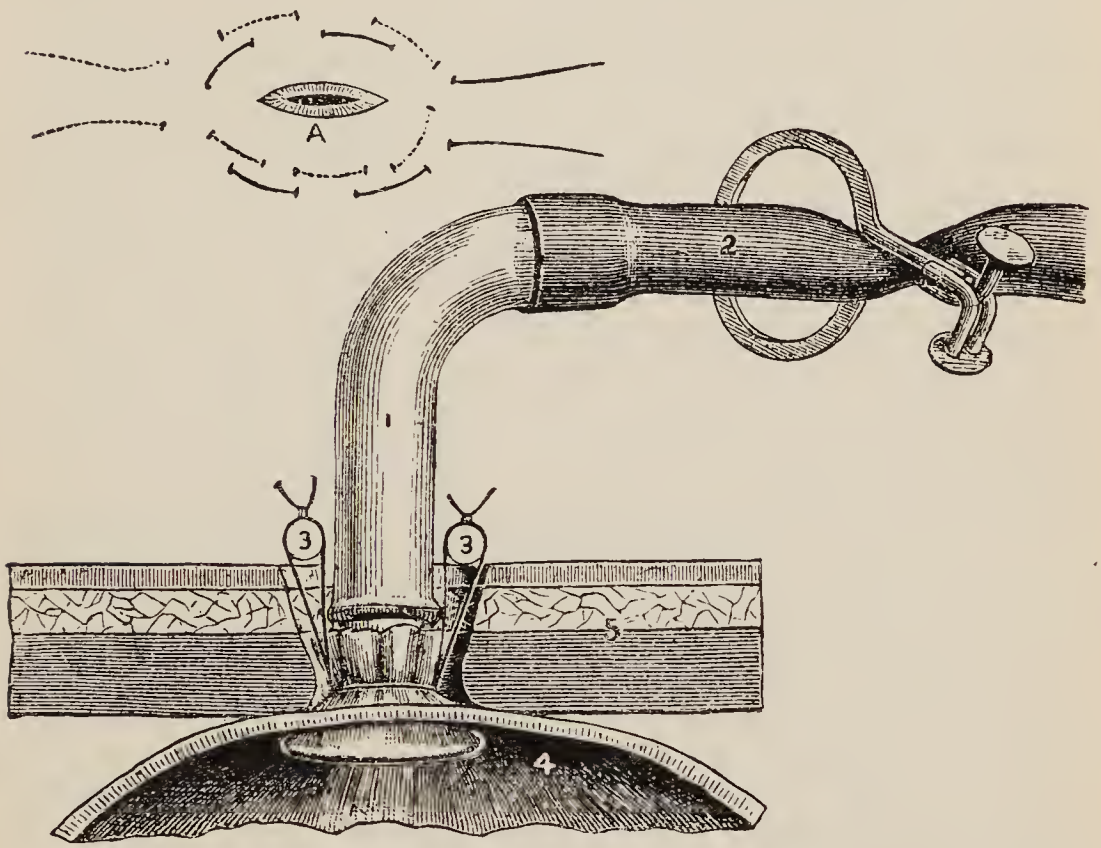
The result obtained is most gratifying. The patient speedily learns to feed himself, and there is not the slightest fear of any regurgitation of food through the wound, since the tortuosity of the new channel and the valve-like action brought about by the contraction of the stomach entirely preclude any such possibility. The tube should be removed about once a month. In order to avoid any difficulty, it is well to cut off the free surplus of the old tube, and pass a long-eyed probe into the stomach through the portion that remains, which may now be removed. The new tube should be strung on a silken thread, the end of which is now to be attached to the probe, and so one readily slides the new tube over the probe onwards into the stomach, and, pulling on the silk, thereafter withdraws the probe. Should the œsophagus again regain its functions, as in cases of cicatricial stricture, it is noteworthy that on withdrawal of the tube there is never any outflow of fluid, and the fistula rapidly heals.

The autopsy in cases examined several months after the operation has shown that the new canal gradually shortens, straightens, and its walls become thicker. The inner extremity is found guarded by a funnel-shaped arrangement of concentric folds of mucous membrane, or it projects inwards something like the ileo-cæcal valve or entrance of the ureters, thus presenting an efficient valvular defence against escape of the stomach contents.—*Edinburgh Medical Journal, Feb.*, 1894, *p.* 708.

49.—GASTROSTOMY IN ONE STAGE.

By F. T. Paul, F.R.C.S., Surgeon to the Liverpool Royal Infirmary.

The history of the operation of gastrostomy is clearly divided into two eras, that before and that since the practice advocated by Howse of undertaking the procedure in two stages. Previously the mortality was almost prohibitory ; subsequently it has been greatly reduced, and is now variously estimated at from 30 to 70 per cent., the correct mean probably approaching to something like 50 per cent. for all operators. The reason that the mortality still remains so high is undoubtedly the late stage



A, Method of passing the ligatures in the stomach. 1, Glass tube. 2, Rubber tube with clip. 3, 3, Sectional view of glass rods over which the ligatures are tied. 4, Interior of the stomach. 5, Abdominal wall.

of the disease at which the operation is put into practice, for the simple exposure and attachment of the stomach to an abdominal wound would very rarely be fatal in a healthy subject. Jacobson, giving his own experience of nine cases in 1891, says that "in three patients the operation was asked for too late." Treves says : "One thing is certain, and that is, the operation is usually carried out too late." All surgeons of any

experience in this matter say the same, and yet the prospect of systematically operating earlier in the disease seems to be remote, as this method of treatment is neither encouraged by physicians nor readily approved of by patients except as a "forlorn hope."

Under these circumstances I beg to recommend the following method of opening the stomach at one operation with power to feed the patient at once. The proceeding is very simple. The preliminary stages of the operation are conducted as usual, but when the stomach is picked up a portion of it is drawn out of the wound, and two running sutures of fairly stout silk are passed in a circle round the site of the intended opening (A) with their ends in opposite directions, care being taken not to include the mucous membrane. The opening is then made, and, each side of it being grasped with artery forceps, one of my small ($\frac{3}{8}$ in.) intestinal glass drainage tubes is inserted, and the ligatures are drawn tight and tied. The exposed part of the stomach is now washed and returned into the abdomen, the external wound drawn together with fishing-gut sutures, and the ends of the stomach ligatures tied over two glass rods (3, 3) crossing the wound, in order that the stomach may be kept in close contact with the peritoneal surface of the abdominal wall. The wound is then powdered with iodoform, dressed with cyanide gauze and salicylic wool, and a bandage applied, a piece of jaconet being placed outside over the dressings to preserve them from becoming soiled. The experience of many bowel cases has shown me that these tubes separate between the third and the seventh days; therefore, from the moment of the completion of the operation to the third day the administration of food or washing out the stomach may be carried on with impunity. On the morning of the third day the wound should be dressed, and from this time until the tube separates, and it is clear that good adhesions have formed, discretion should be exercised as to the amount of food given and the care with which it is administered. If one may judge by analogy, experience with the colon and with one case of gastrostomy seems to show that when the tube separates the surrounding adhesions are sound and strong, and the fistulous opening is safe and efficient. The operation employed in this way is rapid and easy. The original wound may be much smaller than that usually recommended for gastrostomy, and the early stages of repair are conducted under such absolutely safe conditions as regards leakage that the personal supervision of the surgeon is quite unnecessary, a matter of considerable importance in private practice. In colotomy, especially, cases must often be left in the entire charge of the practitioner, who probably has no desire to be responsible for completing the final stage of the

operation by himself a few days later. With the glass tube ligatured into the sigmoid or cæcum I have so left cases without seeing them again, and in no instance has the practitioner had the least cause for anxiety.

The details of the only case of gastrostomy in which I have had the opportunity of using the tube may be very shortly given. They indicate that its use is as safe in the stomach as in the bowel, but this particular case proved to be a peculiarly unfortunate one to have selected for the operation, as the growth had already crept from the cardiac to the pyloric end of the stomach and blocked both orifices. The man who was the subject of the operation was under the care of Mr. J. H. Evans, of Waterloo, with whom and with Dr. Glynn I saw him in consultation. He had malignant stricture of the œsophagus at the cardiac orifice of the stomach, by which the latter was rendered almost impervious, and he was suffering intensely from deprivation of food and from thirst. He had seen several consulting physicians in London, Edinburgh, and elsewhere, and the general advice had been to leave things alone until the symptoms became urgent. This was certainly the case at that time. I tried on two occasions to pass a bougie. Both attempts were unsuccessful, though the second one was thorough and prolonged, and was borne by the patient with marked patience and fortitude. He now willingly accepted the prospect offered by gastrostomy, and being almost *in extremis* and most urgently in need of immediate relief I deemed it to be a suitable case in which to employ the above-suggested plan of performing the operation in one stage. It was carried out exactly on the lines indicated without hitch or difficulty of any kind, and when the patient was put back to bed his condition had scarcely altered for the worse. As soon as the clip on the rubber tube was removed with the intention of passing a little peptonised milk and brandy into his stomach, there escaped nearly a pint of foul, thin, yellow fluid, containing about fifty almost unaltered dried currants. The organ was therefore washed out with warm water before introducing the nourishment. The introduction of fluid into the stomach was effected by simply attaching a funnel to the free end of the rubber tube. We found on inquiry that the last possible occasion on which currants could have been swallowed was at least six or seven weeks previously, it was therefore evident that they had been retained in the stomach ever since, and that the growth must long ago have extended along the lesser curvature and blocked the pylorus. The subsequent course of the case corroborated this view, for many more currants were washed out, and though we were able to and did inject a sufficient quantity of fluid food, apparently very little was absorbed in the presence of the foul cancerous

discharge. The thirst continued, the emaciation rapidly progressed, and the patient died from starvation without any febrile disturbance and without any sign of abdominal pain five days after the operation. In the meantime the tube held perfectly for three days and a half, when, as fluid began to escape beside it, I removed it ; but good adhesions had formed and the fistulous opening was safe for use. During the last two days of his life we washed out the stomach and injected the food through the opening as easily as before, though unfortunately he derived no more benefit from it. It was not possible to make a post-mortem examination ; but it was quite clear that, though the operation did not relieve the symptoms, it was perfectly successful in establishing a fistulous communication with the stomach in a most unpromising subject, and though the operation might be held responsible for not keeping the patient alive, it certainly was not responsible for his death. Had he lived longer I should have discovered whether a fistula produced in this way was likely to prove unduly large ; but my belief is that, owing to the smaller surface of stomach exposed at the bottom of the wound, and the more complete closure of the external wound, the fistula has greater opportunities of contracting, and is less likely to form a patulous opening than is the case with Howse's method. At the same time, if advisable, a metal tube of very small diameter could be used, which would give as narrow a fistula as could be desired.—*The Lancet, December* 23, 1893, *p.* 1562.

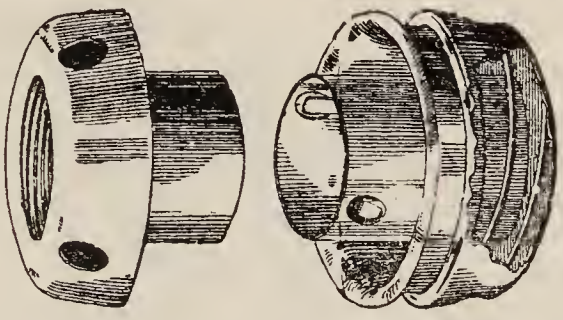
50.—ON CHOLECYSTENTEROSTOMY BY A NEW METHOD.

By John B. Murphy, M.D., Professor of Surgery, College of Physicians and Surgeons, Chicago.

While reading of the great difficulties experienced by operators in performing this operation, I realised that the profession was sorely in need of some more simple and perfect means for the approximation of the gall-bladder to the intestine, and, after trying several devices, I succeeded in producing and perfecting the anastomosis button, which I think fulfils all of the indications. The button is inserted in the following manner.

An incision is made from the edge of the rib, two inches to the right of and parallel to, the median line, extending downward three inches. The gall-bladder is drawn into the wound, also the duodenum. The duodenum is cleared of its contents by

gentle pressure with the fingers. My short intestinal compression forceps are placed upon the duodenum to prevent the escape of gas and fluids after the incision is made. A needle with fifteen inches of silk thread is inserted in the duodenum directly opposite its mesentery, and at a point near the head of the pancreas. A stitch is taken through the entire wall of the bowel, one-third the length of the incision to be made. The needle is again inserted one-third the length of the incision from its outlet, in a line with the first, and brought out again, embracing the same amount of tissue as the first. A loop three inches long is held here, and the needle is inserted in a similar manner, making two stitches, parallel to the first, in the reverse

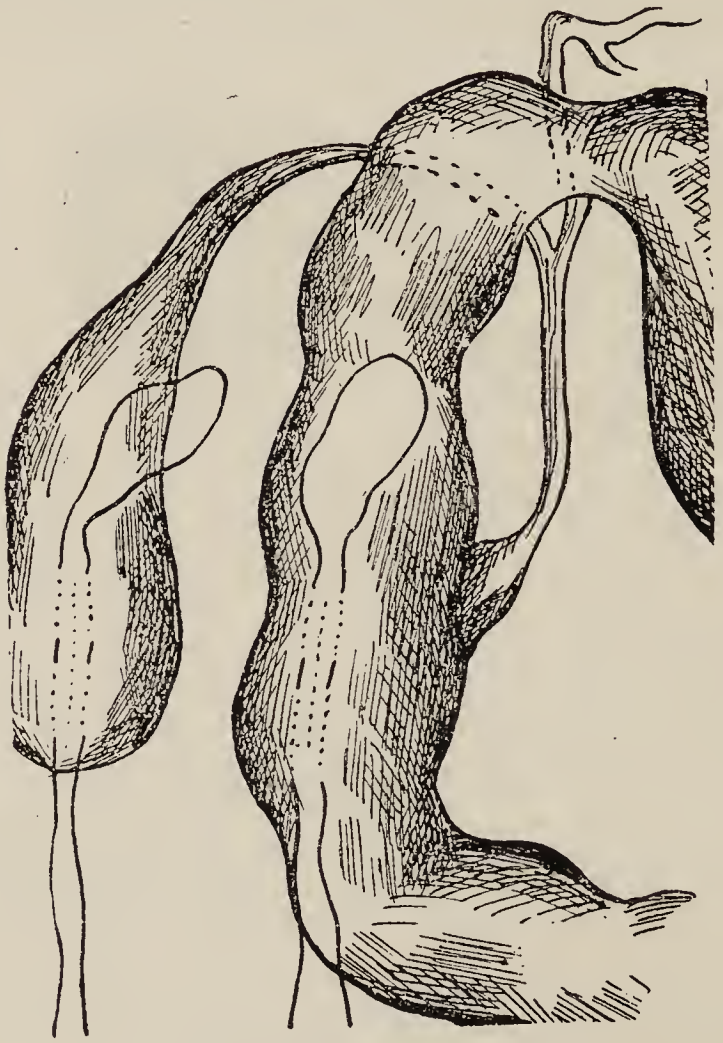


direction, and one-eighth of an inch from it, coming out at a point near the original insertion of the needle. This forms a running thread, which, when tightened, draws the incised edge of the bowel within the cup of the button. In the gall bladder a similar running thread is inserted. An incision is now made in the intestine, in length two-thirds of the diameter of the button used. The button (one part of it) is slipped in, the running string tied, and the button held with the forceps. An incision is then made in the gall-bladder the same length, and between the rows of sutures, the button (the other part of it) is inserted in a similar manner, and the running string tied. The forceps are removed and the button parts are held between the fingers and pressed together. A sufficient degree of pressure must be used to bring the serous surfaces of the gall-bladder and intestine firmly in contact and compress the tissues. The elastic pressure of the spring cup of the button produces a pressure atrophy of the tissues embraced within the cup, and leaves an opening as large as the button, the button dropping into the bowel and being passed through the intestines.

It takes about as long to describe the operation as to perform it. The time occupied with the first patient on whom I operated was eleven minutes from the entering of the peritoneal cavity until the closing of it. On dogs I was from eleven to eighteen minutes in performing the operation, the latter time being on the first dog, before I had made the various improvements in

the technique and button. The operation is more difficult to perform on the dog than on the man, as it is more difficult to bring the gall-bladder into the wound.

To show that this operation is one that the busy surgeon will be frequently called upon to perform, now that the technique is simple, we have only to reflect on the number of cases of chronic jaundice from obstruction of the common gall-duct, requiring some operation for relief, and to draw attention to the defects of the operations now in vogue, namely, the unpleasant and sometimes dangerous sequence of cholecystostomy, and external



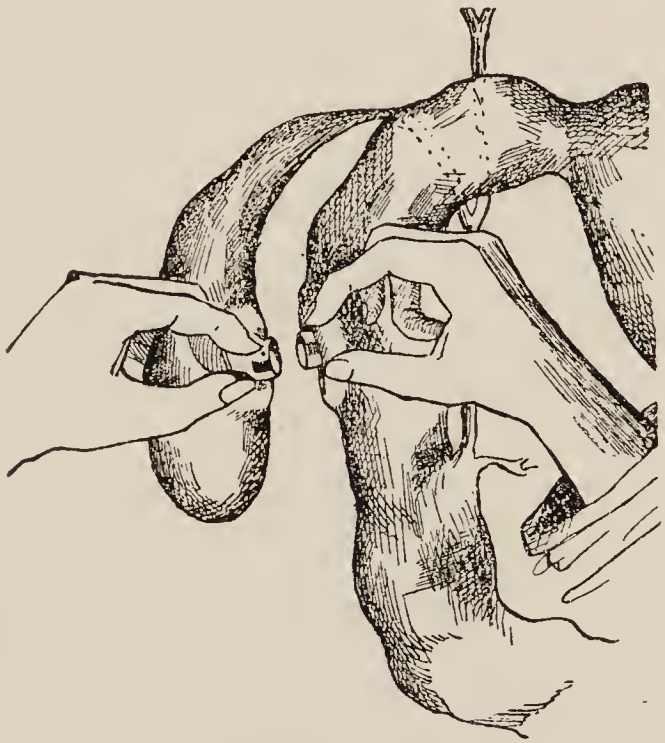
Sutures in Gall-bladder.

biliary fistula, which may of itself be a menace to life, and require a second operation even more critical than the first (as is shown in the reports by Courvoisier); also the difficulties and dangers of cholecystectomy and cholecystendysis.

When we consider that in cholecystostomy patients require two operations, and that the quantity of bile discharged in each case requires at least two dressings a day for two and a half

months, representing an enormous amount of labour for the surgeon and attendants and a very protracted and unpleasant convalescence for the patient; also when we consider that but fifty-one per cent. left the hospital with complete recovery, we can see how very much the profession is in need of some better plan of treatment of the lesions of the gall-tracts than the cholecystostomy by one or two sittings. Take into consideration also the injurious effects of a permanent fistula and we have another very potent reason for abolishing the external opening.

The effect of a permanent fistula of the gall-bladder and constant escape of bile secreted, as frequently follows cholecystostomy, is different, depending, first, on the quantity of bile



Gall-bladder buttoned.

that escapes from the opening, and, second, on what proportion is admitted into the intestinal tract. These facts have been lost sight of by many of the surgeons that have operated and had an external fistula remain, which accounts for the great differences of opinion as to the gravity of a biliary fistula. Where the fistula of the gall-bladder allows only a portion of the bile to escape, the patient and animal, as in Dastre's experiments, can live without suffering from the loss; that is, they are capable of digesting with a much smaller quantity of bile than they naturally secrete. But if we let the entire quantity of bile escape through a fistula the patient soon succumbs. This is thoroughly demonstrated by the twelve

cases collected by Courvoisier. All patients died when the entire quantity of bile secreted escaped through the fistula, and where a large proportion escaped the patients became emaciated and sick. Therefore a safe means of allowing the gall to re-enter the intestine should be welcomed by the surgeon and patient. This operation will produce the same favourable revolution in the surgery of the gall-bladder, that the intra-abdominal treatment of the pedicles did in the treatment of cysts of the uterine appendages.

There are reported in all, up to December, 1893, 23 cases operated on in one sitting, all by means of sutures, with a mortality of thirty-five per cent., or 8 deaths in 23 cases. Since June 11, 1892, up to date, December 1, 1893, there are 17 cases of cholecystenterostomy operated on for gall-stones, by means of the anastomosis button, with 17 recoveries, one hundred per cent. One each by Dr. E. W. Lee, of Chicago; Dr. W. J. Mayo, of Rochester, Minn.; Dr. Fabrique, of Wichita, Kan.; Dr. Alex. H. Ferguson, of Winnipeg, Manit.; Dr. W. B. Rogers, of Memphis, Tenn.; Dr. Luken, of Chicago; two by Dr. F. S. Hartman, of Chicago; one by Dr. Laine, of Media, Pa.; and eight by myself. In all of these cases the result has been a complete restoration of health and no recurrence of symptoms, as will be seen by the following histories. I have had all of my cases and those of Drs. Lee and Hartman visited quite recently, and they are all in excellent health; in not one did the symptoms return as was feared by Dr. Abbé. There was one operation by this method, by myself, in which the lesion was carcinoma of the pancreas, case referred to me by Dr. Keefer, of Sterling. The duodenum was involved in the carcinoma and could not be used in approximation; a loop of the small intestine was drawn into the opening in the abdomen and approximated to the gall-bladder with the button, and the patient died at the end of the fourth day. The post-mortem showed the button in position. It was found that the bowel had been twisted upon itself in the operation and a complete obstruction produced, the same as in volvulus. This accident is an impossibility if the duodenum is used for the approximation, and I wish to call special attention to its possibility, as it is so easily avoided when it is anticipated. There was a cancer in this involving the greater portion of the pancreas, including the duodenum and the common duct. The period of convalescence was in all cases very short, and the patients were not seriously sick immediately after the operation.

This operation is indicated: 1, In all cases where it is desirable to drain the gall-bladder for accumulations therein; 2, in all cases of perforation of choledochus into abdominal cavity, where the duct must be obliterated by the reparative process; 3, in all cases of cholelithiasis where obstruction of duct is present, or

where the reflex disturbances of digestion are marked; 4, in all cases of cholecystitis either with or without gall-stones; 5, in all profusely discharging biliary fistulæ, either following operations or as sequelæ of pathological changes in gall-tract.

The cases in which this operation should not be performed are: 1, All cases where the gall-bladder is too small for the insertion of the button; 2, where the adhesions are so extensive that the bowel cannot be brought into contact with the gall-bladder without kinking; 3, where the ductus cysticus is obliterated, in which cases the operation of cholecystectomy should be performed where there is an absence of adhesions around the gall-bladder; 4, where we have an enormously enlarged gall-bladder with an elongation of the ductus cysticus, and without an obstruction in the ductus choledochus, in which case cholecystectomy should be performed. If the ductus choledochus be occluded, the gall-bladder should be amputated just above the neck, leaving a sufficient portion in which the button can be inserted in the end and the approximation made to the duodenum in the usual way. By this operation we provide again a channel for the escape of the bile into the intestinal canal.—*New York Medical Record, Jan.* 13, 1894, *p.* 40.

51.—ON THE TREATMENT OF INTESTINAL OBSTRUCTION.

By Frederick Page, M.D., Surgeon to the Royal Infirmary, Newcastle-on-Tyne.

It will be readily admitted that few cases give rise to more difficulty and doubt in practice than cases of acute intestinal obstruction, and by acute intestinal obstruction I mean "a total arrest of the passage of fæces and flatus." Why this is so is obvious enough, for acute intestinal obstruction is a symptom of a great variety of conditions, all of which imperil life. The difficulty in treatment arises from the doubt as to the cause of the obstruction. When a strangulated hernia exists—the commonest cause—the treatment is obvious. We attempt to liberate the imprisoned gut by taxis, first without and then with the aid of chloroform; failing, the stricture is at once cut down upon, and the bowel liberated. Herniotomy is successful in proportion to its early performance, and it will not be denied that grave mischief is frequently done by taxis. When no hernia can be found the cause of the obstruction must be within the proper cavity of the abdomen. If it could be ascertained that a portion of gut were strangulated it could make no

difference as to treatment, whether the site of strangulation were in the proper cavity of the abdomen or in a hernial sac—a diverticulum of the abdominal cavity; in both cases the treatment should be the same. Unfortunately it cannot be ascertained that the symptoms are due to strangulation. They must, however, be due to some one or other of the various mechanical conditions which are known to cause obstruction, or to an acute inflammatory process, such as a suppurating gall bladder, peritonitis, or typhlitis. I cannot think that anything but disaster is likely to arise by treating an acute inflammatory attack by abdominal taxis and repeated injections of air or fluid. Opium, bleeding, and fomentations relieve acute inflammatory symptoms, and might cure the patient were the disease not dependent upon a mechanical obstruction or upon perforation. But there is always a cause for peritonitis, and if septicæmia and external injury be excluded, in the great majority of cases, it is due either to a mechanical obstruction or to perforation, and is itself best treated by abdominal section. It is generally impossible to determine what is the cause of peritonitis, or what is the nature of the obstruction, when no peritonitis is present, without opening the belly. Why should not the belly be opened for the purpose of ascertaining the cause of the symptoms, and, if possible, removing it? It must be admitted that cases of acute intestinal obstruction (a very small proportion) recover without operation, the cause of obstruction remaining a matter of conjecture, and that the mortality in cases of abdominal section has been, and at present is, very high. The mortality from herniotomy used to be very high, and from the same cause that the mortality of abdominal section for the relief of intestinal obstruction is now high—delay. The earlier a patient is operated upon for strangulated hernia the better is his chance of recovery, and the earlier abdominal section is performed for the relief of acute intestinal obstruction, the better is the chance of success. I do not wish to convey the idea that the opening of the abdomen is a trivial matter. It is not, nor is any operation in surgery. But exploration by means of an incision cannot, at the present day, be said to add materially to the danger a patient suffering from acute intestinal obstruction is already in, and it may, and probably in most cases would, reveal the nature of the disease. It is not my purpose to discuss seriatim the possible conditions an exploratory incision may reveal, nor how they are (when found) best to be dealt with. I wish to urge the necessity, after a careful examination of the abdomen under chloroform has failed to relieve the patient, of at once exploring the abdomen by means of an incision. What is the alternative? Delay—opium and belladonna, copious and often repeated injections, inversion, abdominal taxis under chloroform, shaking the patient,

and inflation. In how few of the known causes of acute intestinal obstruction can these means possibly be successful? What is the chance of operative interference being successful after they have failed? In how many conditions must they inevitably do harm? I do not say that in no cases of intestinal obstruction are these measures to be resorted to. In the less acute cases they are applicable, and by relieving spasm, softening and displacing fæces, are often successful, just as in cases of incarcerated hernia they suffice. Chronic intestinal obstruction generally depends upon blocking of some portion of the large intestine, and the symptoms are not nearly so urgent, but even in such cases it may be found necessary to open the abdomen. Such cases often require the large gut to be opened, and, in my opinion, this is far better done by an anterior incision, either inguinal or median, than by lumbar colotomy. There are cases —I think, the more acute—where the indication is to open the abdomen at a very early period; others more chronic where delay and other means are indicated; and there is an intermediate subacute class where it is most difficult to determine what shall be done. The best guide to treatment is, I believe, the effect the disease is having upon the patient. If the symptoms, narrowly watched, indicate that the vital powers are threatening to fail, then, though the symptoms themselves may not be very severe, I think operative interference should be resorted to, and where the question as to the propriety of opening the abdomen or waiting is pretty evenly balanced, I am of opinion it is better to operate. I know at present of no better criterion as to the necessity of operative interference in these most anxious cases than the effect the disease is producing upon the patient. It is not unreasonable, I think, to expect, with so many able men looking at this difficult problem, and from opposite points of view, that the time may come when it will be possible to make a more accurate diagnosis than we can to-day arrive at: but at present I know of no better criterion as to the necessity of operative interference, in cases of intestinal obstruction, than the effect the disease is producing upon the patient.—*British Medical Journal, December* 23, 1893, *p.* 1369.

52.—ON THE TREATMENT OF INTESTINAL OBSTRUCTION.

By Jonathan Hutchinson, LL.D., F.R.S.

In the discussion opened with the preceding article by Mr. Page, Mr. Hutchinson said that the only disappointment which he felt as regards Mr. Page's paper was that it left statistics

aside. He agreed with most of what Mr. Page had said, and was entirely with him in reference to the dangers of delay. He feared that the results of early laparotomies had, during the last ten years, been very discouraging. He had made it his business to collect all the facts he could, and to make wide inquiries amongst his professional friends, and the result was a strong impression that laparotomy for intestinal obstructions of an unknown nature was very seldom successful. He should have been very glad if Mr. Page had been able to produce statistics which should have removed this impression. Nor was he, he regretted to say, quite free from suspicion that the operation was in itself a cause of danger. It was, he held, unsafe to trust to statistics obtained from other departments of surgical experience, such, for instance, as ovariotomy and the radical cure of hernia, and to infer from them that the peritoneum might, under all conditions, be exposed with impunity. It still remained a possibility that when congested and inflamed there might be special danger. It was worth while, he thought, in respect to this point, to advert to modern experience in reference to the external forms of hernia. These came the nearest of any class of cases to what some call "acute internal obstruction," a certain proportion of which group was made up of strangulation by bands. He much feared that the statistics of herniotomy operations did not give unqualified support to the arguments of those who held that operations did not increase risk. It was generally admitted that at the present day, with all our improvements, the fatality attending hernia operations ranged from 35 to 40 or even 50 per cent. We were, in this respect, not a whit better than our forefathers—indeed, no modern surgeon had approached the excellent statistics of Mr. Lube—whilst by general consent far less attention was given to the taxis than formerly. Students were now warned against the taxis as being in itself dangerous, and on all hands early operations were enjoined. Yet despite the fact that many cases were now operated on which would formerly have been reduced without, the statistics of the operation did not improve, and it might be reasonably feared that the fatality of strangulated hernia, taken as a whole, had increased. He could not avoid a very strong impression that if ever it should become the common practice in intestinal obstruction cases to operate early, and without attempting relief by other means, the fatality of this class of cases as a whole would be greatly increased. He had been through his whole professional career a zealous advocate for the taxis both in external herniæ and internal obstructions, and he was so still. His experience included twenty-three years on the staff of the London Hospital, an institution which had perhaps as large a number of hernia cases as any in the world.

He did not believe that the taxis, properly used, did any harm. It was to the strangulation itself that the results were due which it was customary to attribute to the surgeons' hands. He was sometimes amused to hear "forcible taxis" denounced. He had always been accustomed to use all the force that his hands possessed, and had often regretted that they tired so soon. It might be asked did not patients sometimes die after successful reduction by forcible taxis. To this the reply was—Extremely rarely. It was in inguinal herniæ especially that he had been successful, and he had never in a single case had death ensue. He had lost three patients after reduction of femoral hernia by taxis, but not one after inguinal. It was the experience of all surgeons that little or no anxiety attached to cases in which the taxis succeeded, whilst statistics placed it beyond doubt that the mortality after operation was large. These undoubted facts constrained the belief that the operation was in itself a cause of danger. Applying these facts to internal obstructions, he held that they suggested the conclusion that laparotomy would not be without its risks, and this conclusion statistics certainly seemed to support. For the last twenty years or more he had been a warm advocate of what he had called abdominal taxis. He did not suggest that it should take the place of laparotomy, but rather that it should always precede it, and that it should be done very early in the case, just as taxis would be attempted in hernia. The procedures which he recommended had been both misunderstood and ridiculed. Some had called them archaic, others had spoken of them as a kind of massage, and yet others had compared them to tossing in a blanket. To compare them to massage was absurd; to speak of them as archaic involved no disparagement if they were efficient. What he did was done vigorously. The patient, having been put under full anæsthesia, had his abdomen vigorously kneaded, the intestines being pushed from side to side; then he was turned over upon his belly, and in this position well shaken: lastly, he was held head downwards and again shaken up and down. Enemata were also administered with the body inverted. He had had numerous most definite successes by this plan, both in hospital and in private. Several of them were cases in which he had been summoned long distances into the country, with an express request that he would come prepared to operate. He held that there was nothing at all improbable in the supposition that such manipulations might reduce a knuckle of gut which had slipped behind a band, or undo a twist or dislodge a block of hardened fæces. None of his successes had been in very recent cases, for as a matter of fact the operating surgeon was seldom consulted until some days had passed and many measures of treatment had failed. Some of them had been attended by

very acute symptoms at the onset. He was no believer in the usefulness of the term "acute intestinal obstruction," for there was no definite group of cases to which it was applicable. Cases of strangulated hernia were often not acute at first, and so in internal stoppages those most needing operation were often quiet at first. On the other hand, sudden and severe symptoms often marked the onset of cases which got well without operation. Diagnosis of the precise lesion, excepting in the case of intussusception, would be admitted by all candid surgeons to be a matter of impossibility. Blocks from gall stones were cases in point. Operations in these had been repeatedly performed, and, so far as he knew, never with a correct diagnosis beforehand. It was, he held, a serious misadventure to open the abdomen in gall-stone obstruction, for case after case had died, whereas if left alone almost all recovered. Further, he denied that anyone could venture a confident prognosis in obstruction from an unknown cause, for not infrequently cases which had appeared hopeless survived. For the reasons stated he held that those who advocated prompt operations in cases of abdominal obstruction from an unknown cause did so on theory, and were quite unable to support their recommendation by appeal to facts. It was, he considered, quite unjustifiable to resort to operation without having first made a painstaking attempt at taxis, just as much so perhaps, even more, than in the case of hernia. After abdominal taxis had been tried and failed, then laparotomy might be practised without delay, and very frequently it would be found that the procedure had materially helped the diagnosis. In conclusion, he urged strongly upon all who saw these cases in their early stages that no time should be lost, but that as soon as it was clear that real "stoppage" existed, an anæsthetic should be given and "abdominal taxis" tried.—*British Medical Journal*, *December* 23, 1893, *p.* 1370.

53.—PERITONITIS DUE TO INFECTION FROM THE INTESTINE

By Frederick Treves F.R.C.S., Surgeon to the London Hospital.

[The following is taken from Mr. Treves's admirable Lettsomian Lectures on Peritonitis.]

The micro-organism which appears to be usually answerable for the numerous forms of peritonitis met with under this heading is the bacterium coli commune. This most remarkable and common bacillus was first described by Escherich in 1885 ;

its definite pathogenic properties remained imperfectly recognised until 1889, when they were expounded by Laruelle, by Rouxe and Rodet, and many others. Within the last few years the literature appropriated to this little organism has become so extensive as to be almost overwhelming.

The bacterium coli commune exists normally in the human body, and is found in individuals in a state of perfect health. It has been demonstrated to be present along the whole length of the alimentary canal, from the mouth to the anus. Its natural habitat is the bowel. It is said to be especially numerous in the duodenum and in the colon, and it has been found in the bile passages. It is certainly the most abundant and the most constant of the bacteria found normally in the human body, and has been estimated to form 95 per cent. of the micro-organisms met with in the bowel of man. Sternberg gives a list of forty-eight micro-organisms which have been isolated from human fæces or the contents of the intestine. Of this number twenty-five are non-pathogenic, and of the pathogenic forms not a few represent the same bacillus under different names. There is no doubt that special names have been given to micro-organisms which are mere variations of one common form.

This matter is well dealt with in the excellent monograph by Tavel and Lanz, a work which forms by far the most important recent contribution to the subject of the etiology of peritonitis. Tavel and Lanz regard the term bacterium coli commune as a generic term applicable to an extraordinarily numerous family of bacteria. They themselves indicate some twenty varieties in this great family. These authors also have pointed out that the colon bacillus is sometimes mobile and possessed of cilia, and sometimes immoble. They do not, however, associate any pathogenic differences with these two forms, which they have admirably figured.

The bacterium coli commune has a striking feature in that it appears to vary in virulence. So far as experiments upon animals are of value it would seem to be quite harmless when taken from the normal intestine. A culture of the bacillus so obtained has no effect when injected into the peritoneum of animals. If, however, the bowel become the seat of certain diseased conditions (or it may almost be said of any diseased condition), then the bacillus becomes at once virulent. Virulence has been found to be developed in cases in which the bowel was obstructed, strangulated, or inflamed, in venous congestion of the gut, in œdema of the bowel wall, in diarrhœa, in typhoid fever, and in cholera. In a case of diarrhœa produced by tartar emetic this colon bacillus was found to have become virulent. It also appears to develop qualities for evil in instances of advanced constipation.

In any case experiments show that the virulence when once developed may vary considerably in degree. Tavel and Lanz describe an interesting case of localised abscess due to mischief in the vermiform appendix. The pus was swarming with the colon bacillus. Quantities of the same bacillus were found in the peritoneum, but there was no peritonitis. Much gas is discovered in the peritoneal cavity. When the intestine is healthy the bacterium coli commune has little disposition to escape through the gut wall or to invade the tissues of the body after death. If, however, the intestine be damaged or diseased, then the bacterium shows an active inclination to penetrate through the bowel wall, and is usually found to have extensively invaded the tissues after death. The disposition of the bacillus to pass through the intestinal wall under the circumstances just stated is well illustrated in examples of slight degrees of strangulation of the bowel produced by experiments in animals.

The effects of injecting a culture of the virulent colon bacillus into the peritoneum of animals varies—other things being equal—according to the dose. In the slightest cases the animal, after an illness in which diarrhœa is a symptom, recovers. In another grade a localised purulent peritonitis is produced, which follows a chronic course. In a third degree death is rapidly brought about by a diffuse fibro-purulent peritonitis. In instances in which a large dose is employed, the animal dies of acute sepsis before any phenomena of peritonitis are produced. When peritonitis *is* produced, it is usually purulent. The presence of fluid in the peritoneum, and especially of blood, greatly aids the development of peritonitis in these experiments. The activity also of the bacillus is much increased, if it be injected with sterilised fluid from the intestine as a medium. If a sterile saline solution be used the effect is diminished. The endothelial cells of the peritoneum do not appear to act as phagocytes, for in various experiments in which the colon bacillus was injected into the peritoneal cavity, it was never once found by Ziegler within these cells.

It has been clearly demonstrated that the bacterium coli commune can produce pus after inoculation. It has been found in man in a state of almost pure culture in the pus from an ischio-rectal abscess. So far as the human subject is concerned, it has been shown that these various forms of peritonitis which are assumed to be of intestinal origin, depend mainly and in many instances solely upon the bacterium coli commune.

In peritonitis associated with hernia, the colon bacillus is the micro-organism most commonly found in the sac. This is the case in all stages of strangulation, and is independent of the character of the fluid, the bacilli being obtained in cases in

which the fluid in the sac is copious and opaque, as well as in those in which it is clear and scanty. In fifteen examples of hernia, Bönnecken found the bacterium coli in the sac in thirteen instances.

The bacillus so commonly found in the hernial sac by Clado, in 1889, is now known to have been the colon bacillus. Tavel and Lanz examined bacteriologically the exudation in the sac, or in the adjacent peritoneum in twenty-one cases of strangulated hernia, in two cases of "hernial hydrocele," and in one case of suppuration of the sac. In eighteen instances they discovered no micro-organisms of any kind. In five examples—including three in which the gut was apparently not involved in the rupture—bacteria were found, the most common being the bacterium coli commune. The authors consider the cases unassociated with micro-organisms to be examples of "chemical peritonitis," and to be due to the products of bacteria rather than to the germs themselves; they do not, however, commit themselves to the opinion that the bacillus chiefly concerned is that now under consideration. Laruelle has demonstrated the bacterium coli commune in gangrenous hernia, and in gangrene of the gut produced artificially in animals.

Arndt has shown, by a series of most carefully conducted experiments, that micro-organisms can pass through the gut wall into the peritoneal cavity, when the strangulation is of quite a slight grade, and is very far short of producing even a limited gangrene. Bönnecken's investigations give practically the same result. Cornil found bacteria actually in the substance of the wall of a partly necrosed intestine. Tavel and Lanz are of opinion that while micro-organisms cannot pass through the wall of healthy bowel, they are very ready to escape if the gut be the seat of even a slight lesion. It is only fair to say that Orth's experiments do not support these very widely held opinions.

The colon bacillus has been shown by Cornil, Babes, and others to be almost exclusively the bacterium concerned in perforative peritonitis. Barbacci states also that it is practically the only bacillus to be produced in cultures from the exudation in perforative peritonitis in man. The same applies to perforative peritonitis produced experimentally in dogs. In this form of peritoneal inflammation, the other micro-organisms found in fæces develop in the serous cavity, but only for a time. The bacterium coli commune alone survives. Barbacci points out that the liberal development of this bacillus is greatly favoured by the presence of such a medium as is provided by the fluid contents of the intestine, a material which readily damages the peritoneal endothelium. He considers that death is due to absorption partly of the bacterial products, and partly of the

noxious chemical matters contained in the intestinal fluid which escapes into the belly cavity.

In the same way it has been demonstrated that this micro-organism is the active agent in the majority of cases of peritonitis starting from the appendix. Adenot gives four cases of so-called appendicitis attended with suppuration, in the pus of which the colon bacillus was found in a pure culture. In another instance in the exudation upon the surface of a non-perforated appendix containing a concretion, this bacillus was the only micro-organism found. Tavel and Lanz, in the valuable work already quoted, deal with twenty-three cases of trouble in the appendix. An examination was made either of the pus within or without the appendix, or of the exudation into the peritoneal cavity immediately around the diseased process. The material for this bacteriological examination was obtained during the patient's life. In three instances no micro-organism was found. In nineteen examples the colon bacillus was found either alone or in association with other pathogenic germs. The streptococcus was found in several cases, the pneumococcus was met with in two examples, but not in pure culture. The staphylococcus pyogenes citreus was in one instance the only micro-organism discovered. Tavel and Lanz give five cases of internal strangulation of the bowel and one case of resection of the gut. In three of these the colon bacillus was found in the exudation of the peritonitis which resulted.

Chemical Peritonitis.—One of the five cases affords a good example of "chemical peritonitis." The patient, aged 40, had symptoms of intestinal obstruction. Laparotomy was performed on the seventh day. Strangulation by an omentum band was discovered; there was general peritonitis; the abdomen was drained. The fluid escaping from the drainage tube proved to be sterile on cultivation. The patient recovered.

Bignami, Bastianelli, Le Sage, and Macaigne, have shown that in suppurative or ulcerative troubles of the gall bladder or biliary passages the bacterium coli commune is often the only bacterium found. Roswell Park has also furnished a case illustrative of this association. In three examples of peritonitis following suppurative inflammation of the gall bladder, Tavel and Lanz found the bacterium coli commune in two instances and pyogenic cocci in the third.

This bacillus has also been found in cases of peritonitis following operation, and on this subject Dr. Welch writes as follows:

Its presence several times in pure culture, in laparotomy wounds treated aseptically, although apparently not a source of serious trouble, was not a matter of indifference. It was

generally accompanied with moderate fever, and a thin, brownish, slightly purulent discharge, of somewhat offensive but not putrefactive odour. The smooth and rapid healing of the wound was interfered with. In some of the cases there was evidence of intestinal disorder.

In the cases of peritonitis after laparotomy in which the colon bacillus is found, it is probable that such an injury had been inflicted upon the intestinal peritoneum at the operation as to permit the bacterium to escape through the bowel wall. It has been shown that it requires but little damage to the bowel or to its serious covering to allow of such escape.

It is well known that pneumonia is not an uncommon sequel of peritonitis, and it is possible that in certain of these cases the colon bacillus is the active agent. It has been found in the pleura when pleurisy was present (Laruelle), and has been obtained by puncture from the hepatised lung some days before death from peritonitis (Macaigne). Fisher and Levy give two cases of strangulated hernia with pulmonary complications, and in both instances the colon bacillus was found in the affected parts of the lung.

Finally, it has been assumed that some of the constitutional symptoms attending severe constipation may be due to the absorption of the products of this widely diffused bacillus.

The exudation associated with the bacterium coli commune when it attacks the peritoneum is often characteristic. It is well seen in cases of inflammation about the appendix. The fluid is at first clear and greenish looking. It then becomes greenish yellow, thin, semi-opaque, and foul smelling. If it pass on to suppuration the pus has no especial characters except that it is frequently offensive. In chronic cases there is sometimes produced a white, soft custard-like material which is often met with in operations upon the appendix during a quiescent period and which I do not think is changed pus nor a residuum left by pus. In some long-standing cases I have scraped away a full teaspoonful of this matter from about the cæcum.

In concluding the account of this variety of peritonitis it may be pointed out that the irritant which induces the peritonitis and which reaches it from the intestine may follow more than one path. (1) Bacteria may escape through a perforation in the bowel ; (2) they may pass through the wall of a segment of intestine which has been in some degree damaged but not perforated ; and (3) chemical products of bacteria may reach the peritoneum by either one of these routes.—*British Medical Journal*, *February* 17, 1894, *p.* 342.

54.—ON THE USE OF APERIENTS IN PERITONITIS.

By Frederick Treves, F.R.C.S., Surgeon to the London Hospital.

[The following is taken from Mr. Treves's Third Lettsomian Lecture :]

At the commencement of the century the use of aperients was a necessary element in the routine treatment of peritonitis. By aperient treatment may be understood the obtaining of an action of the bowels by either drugs or enemata. After a certain number of years the practice altered, and the dictum went forth that when any signs of peritonitis were present, aperients were to be absolutely forbidden.

Within the last few years the more ancient method has been revived, but it has been revived with very radical modifications. To Mr. Lawson Tait the profession is indebted for this return to an almost forgotten practice, and, above all, for the employment of that practice with the new element of discrimination. Mr. Tait's measure has been frequently spoken of as "the treatment of peritonitis by aperients," and it has been assumed by some (and probably with disaster) that a purgative is necessary in every case of peritoneal inflammation. Mr. Tait's precise words on this subject are as follows :—"I have never said that the purgative treatment will cure peritonitis, for peritonitis, once it is completely established, is a practically incurable disease, and almost uniformly fatal." It is on this very point that the centre of the position with regard to this treatment turns.

Aperients can never be adopted in the routine treatment of peritonitis. In the larger proportion of cases this measure is entirely useless, and in the great series of the septic forms it is more or less impracticable. In most of these septic examples enemata of any kind may be administered, and purges of any character may be given, and the probability is that the bowels will not act at all, and if they do respond it is more than probable that the treatment will not affect the prognosis in the least, and certainly not in the patient's favour. If the aperient could eliminate the fatal poison which is circulating in the patient's system then good may follow, but even the most enthusiastic advocates of purging cannot credit their drugs with this power.

There is no doubt but that there is within the intestine an amount of noxious or poisonous matter which remains harmless so long as the viscus retains its normal condition, but which may lead to septic symptoms if certain changes are induced in the wall of the bowel, or possibly in its contents. This has

been especially shown in connection with the potentialities of the colon bacillus, and it is clear that these noxious elements include not only simple chemical substances, but also various micro-organisms and their hurtful products.

Equally evident does it appear to be that the injurious matters within the disordered bowel can, within certain possibly narrow limits, be got rid of by the action of aperients. In acute intestinal strangulation death may follow in a few days. The patient in such cases dies neither of pain, nor of vomiting, nor of the obstruction to his bowels. After his death there may be found no signs of peritonitis, or evidences only of the slightest form of that condition. He dies of general septic intoxication, and the poison is derived from his intestine.

This poison is rendered potent by the abrupt and gross changes which the strangulation has produced in the intestine. Mere retention of the contents does not explain the disastrous results. In examples of chronic obstruction the bowels may not act for six or eight weeks, and yet the patient may recover. The subject of a constipation of this degree will, it is true, exhibit some signs of poisoning. He is languid and apathetic, he vomits, the taste in his mouth disgusts him, he has headaches, his breath is rendered intensely offensive by reason of the matter, probably gaseous, which has been absorbed from his intestine, and is to some extent discharged from the blood through the lungs.

Some gross disturbance in the complex mechanism of the bowel wall is needed to render the poisonous contents of the intestine acutely poisonous and to favour its ready introduction into the system. Of the effect of a thorough evacuation of the alimentary canal in such an instance surgical experience can testify. Such a case as the following must have come within the knowledge of every surgeon who has dealt with many cases of intestinal obstruction. Some years ago I was called to see a vigorous man of 45 who had suffered from acute intestinal obstruction for some three days. I opened the distended abdomen, and I recognised that peculiar faintly-stinking peritoneum with which such operations soon make one familiar. Immediately beneath the incision was revealed a single omental band which had caused the trouble. This was divided and the abdomen was closed. The operation lasted a few minutes. Still the man died, and the necropsy revealed no perforation and no gangrene of the bowel, and no abnormal change in the peritoneum save a little stickiness. The patient died, not because his bowels were obstructed, but because that obstruction allowed septic matter to be absorbed from his intestine. His trouble was not outside his bowel, but within it. Had I made an opening in the gut and allowed the poison-loaded viscus to relieve itself,

the result may have been different. Such an operation would have been comparable to the washing out of the stomach after an active poison had been swallowed.

It is a fact that the most successful treatment of acute obstruction of a certain grade is that which provides for a thorough evacuation of the loaded gut. A blindly-executed enterostomy, with an utter ignoring of the cause of the obstruction, has been attended by better results than have operations in which the agent of the obstruction has been discovered, after elaborate search, and has been satisfactorily dealt with. This treatment of acute obstruction by the evacuation of the bowel before all things we owe to Benjamin Travers, the father of intestinal surgery. In cases of strangulation of a certain degree, he insisted that the bowels should be cut into and emptied, even after the obstructing band had been removed. He considered that the operation was not complete until this had been done; he urged that safety was only to be obtained by an evacuation of the gut, and he supported his views by numerous cases and experiments.

Another illustration of these self-same points is afforded by perityphlitis. In a previous section of these lectures I have shown that those cases of perityphlitis in which there is diarrhœa, or in which the bowels act naturally or under the influence of aperients, are attended with a much lower mortality than are the cases in which constipation is marked. In my own experience I am convinced of the value of the aperient treatment in the earliest stages of these cases, and of the pursuit of the same measure throughout in selected instances. In some cases, however, nothing within reason will bring about an action of the bowels. The subjects of repeated attacks of perityphlitis are aware themselves of the evil effects of constipation, and many of them have learnt that they can ward off an attack, or minimise it, when it comes, by a prompt aperient.

A further illustration of the subject from the same standpoint is afforded by that alarming intestinal condition which is sometimes met with after abdominal operations, and which was at one time spoken of as peritonitis. The exact nature of this condition was, I believe, first recognised by Dr. Malcolm. It has been fully dealt with subsequently by Olshausen and Verchere. The former writer has applied to it the convenient name of "pseudo-ileus." The symptoms are these: On the second or third day after a not necessarily severe abdominal operation the abdomen becomes distended, the patient becomes uncomfortable, and complains of "wind." The distension increases; vomiting sets in. At first only the contents of the stomach are rejected; very soon the matter becomes bilious, and finally there is copious "coffee-grounds" vomiting, and this

may present a fæculent odour. The vomiting tends to become worse and worse, and is much more copious than is common in peritonitis. The pulse becomes smaller and feebler, the temperature usually sinks, and exhaustion increases with alarming rapidity. On the fourth or fifth day after the operation the patient may die. At the necropsy the peritoneum may be found to be practically unchanged, or to exhibit so trifling a degree of peritonitis as not to account for the symptoms, nor for the fatal result. Various explanations of this condition have been given. There is no doubt that the nervous disturbance which attends any abdominal operation leads to some degree of intestinal paralysis. This paralysis, attended as it is by vasomotor changes in the bowel wall, is favourable to the absorption of septic matters from the intestine. The paresis may be slight and may disappear spontaneously, or it may subside if the distension of the bowel can be relieved by the introduction of a rectal tube. If it persist it appears to permit of a filtration through the intestinal walls of septic materials, of bacteria, or of their products. These latter are readily taken up by the peritoneum, and a septicæmia commences. This is the explanation given by Olshausen, Verchère, and others, but it is not accepted by Dr. Malcolm.

Anyhow, it was pointed out by Mr. Tait, and has been made evident to most surgeons who have followed his teaching, that if an action of the bowels can be obtained at the outset of the symptoms, either by the administration of a purgative or by an enema, the trouble in a large proportion of cases passes away, and the patient makes a good recovery. It cannot be said that this good result follows in all cases, and it is evident that the purgative, like the emetic given in acute poisoning, can only bring about an arrest of the symptoms within certain limits.

It only remains to point out that when once general peritonitis has established itself, an aperient is without avail. In those septic cases in which diarrhœa occasionally sets in, this is only too apparent. An example such as the following serves to illustrate this point:—A woman, aged 43, was seized with symptoms of acute abdominal trouble some hours after eating a very heavy meal. She was admitted into the London Hospital on the fourth day after the onset of the attack. She had then the symptoms of peritonitis. A laparotomy was performed, and an enterostomy was carried out without any attempt having been made to discover the cause of the inflammation. The patient died in two days, and before that time the bowel had entirely emptied itself through the artificial opening. The symptoms of peritonitis were in no way influenced, and I imagine that the patient's death was neither hastened nor delayed. The jejunum was found to be gangrenous in two

places, as a result of very acute enteritis. There was general peritonitis, but no perforation.

In conclusion, therefore, it must be said that aperients—in the ordinary sense—are of no avail in established general peritonitis. That in the peritonitis following hernia, or associated with acute intestinal obstruction, the complete evacuation of the bowel is desirable, for reasons which are apart from the peritonitis. In septic peritonitis—in the usual acceptation of that term—aperients are useless, and the same may be said of their employment in true perforative peritonitis.

In a large proportion of examples of perityphlitis, and in the pseudo-ileus which may follow after operation, the prompt evacuation of the bowels is often attended with the very best results.

On both theoretical and clinical grounds the thorough emptying of the intestine before any abdominal section is performed may be regarded as absolutely essential.—*British Medical Journal, March* 10, 1894, *p.* 517.

55.—ON FEVER IN PERITONITIS.

By Frederick Treves, F.R.C.S., Surgeon to the London Hospital.

[The following is an excerpt from Mr. Treves's third Lettsomian Lecture.]

The temperature in peritonitis is liable to fluctuation so numerous and extreme that it is difficult, if not impossible, to deduct any type of temperature which may be considered to be characteristic of the disease. Probably there is no affection attended with fever in which the temperature charts of a large series of cases exhibit fewer data for the establishment of a common standard of fever.

A careful examination and analysis of the temperatures recorded in 100 cases from the London hospital makes it evident that the one symptom of fever can afford very little guide in estimating the gravity of the case or in forming a dogmatic prognosis. A comparison of the temperature charts in the cases that recover with those that die leads only to a bewildering result. In some of the fatal cases the temperature has moved steadily upwards, in others it has moved steadily downwards, in the third series of cases an even line of high fever has been followed, while in a fourth set of instances the temperature has been about or below normal. It is quite evident that no marked or regular relation exists between the range of temperature and the character of the peritoneal effusion.

In very general terms it may be said that perforation leads at first to a sudden drop in temperature, and that if the body heat be at the time high the onset of diarrhœa is associated with a more or less rapid diminution of fever. Moreover, it may be remarked that the chart record which carries with it the stamp of an almost inevitably fatal result is that in which the temperature is for consecutive days below normal. The most robust evidences of fever are common in cases in which a plastic peritonitis, or one leading to well-encapsuled pus, is present; while the examples associated with a low range of temperature often mark the cases in which a general sepsis (as from the intestine) is more pronounced than the peritoneal inflammation.

The details of the temperature can best be illustrated by reference to the various forms of peritonitis. In peritonitis due to hernia the temperature is for the most part low and does not rise in the majority of the cases above 99·5 degrees. Before death the temperature in these, as in other marked septic cases, usually sinks lower and lower. Occasionally it may spring up to 105 just before death. This sudden elevation of temperature has been ascribed by some to a disturbance of the heat-controlling centres by the circulation through them of blood charged with septic matter. In the hernia cases the temperature ran highest (99 to 102 or 103 degrees), in those instances in which the gut reduced in the abdomen was practically gangrenous, or was extensively ulcerated. The onset of diarrhœa led to a fall in the temperature.

In peritonitis due to perforation the temperature in the most rapid cases is that of collapse. If there be an existing high temperature at the time of the perforation it may slowly sink, especially in cases in which the bowels continue to act freely, or may sink for a time and then rise again, as is commonly noticed in examples in which all action of the bowels ceases after the perforation.

When the perforation it slowly brought about the temperature may rise at first and then sink slowly towards death.

In peritonitis attended with gross disease of the intestine the temperature is disposed to rise steadily and then to drop somewhat abruptly before death. With actual gangrene of the bowel a high range of fever is common, and with profuse diarrhœa a lower range. On the third day a copious diarrhœa began, and its apparent effect upon the temperature shows a common condition.

In peritonitis due to mischief in the appendix the fever is usually high and of the ordinary inflammatory type. Its average range is from 99 to 102 or 103 degrees. Its duration varies greatly, and a lower range of temperature is generally met with in the cases attended by diarrhœa.

In peritonitis starting from the pelvis (with which is included puerperal peritonitis), the temperature is rather that of septicæmia.

In examples of peritonitis following wound of the abdomen the temperature is for the most part fairly high, running on an average between 99 and 101 to 102 degrees. In two cases from the London Hospital series, it remained throughout below normal.—*British Medical Journal*, *March* 3, 1894, *p.* 457.

[See also "Vomiting in Peritonitis" in *Synopsis* of this volume of the "Retrospect."]

56.—ON THE OPERATIVE TREATMENT OF PERITONITIS.

By Frederick Treves, F.R.C.S., Surgeon to the London Hospital.

[The following is taken from Mr. Treves's Third Lettsomian Lecture.]

The operative measures are represented by incision and drainage, with or without irrigation. This treatment must be considered, as it applies to peritonitis, under two entirely different aspects. In one series of cases there is vigorous, well-defined inflammation, the local symptoms are marked, pus is produced, and may be considerable in amount, and the exudation is more or less clearly localised. Examples under this heading are afforded by peritonitis started by mischief in the vermiform appendix, by many forms of peritonitis within the pelvis and in the subphrenic region, and by certain cases of limited inflammation following upon injury or perforation. In the other series of cases the peritonitis is diffused, the constitutional symptoms are more prominent than the local ones, the changes in the serous membrane—so far as evidence of inflammation is concerned—are comparatively slight, and are out of proportion to the general disturbance. This form is illustrated by cases in which there is a general septic intoxication starting from the peritoneum, by peritonitis due to perforation, or following after strangulated hernia or enteritis, by puerperal peritonitis, and by examples of genuine peritonitis following operations upon the abdomen. In the first series of cases surgical interference by incision and drainage ranks with the procedure of evacuating a large abscess. In the second series the cut into the abdomen and the subsequent flushing out or drainage are to be compared with the washing out of the stomach after an active poison has been swallowed. In the one case the body has to be rid of the products of

a robust and possibly limited inflammation ; in the other case an attempt has to be made to remove from a cavity a poison which has already wrought no little harm. The operation in the latter instance is directed, not so much against an inflammatory outbreak, as against a progressive poisoning.

The operative treatment of suppurative peritonitis, especially when the effusion is localised, has been remarkably successful. Records of the operation extend back into the eighteenth century, and all that modern surgery can lay claim to is the application of the treatment with greater boldness, with greater frequency, and with infinitely less delay.

The operative treatment of general diffused non-tuberculous peritonitis has, so far, no record to boast of and little progress to chronicle. I am doubtful if a single human life has been saved by surgical interference in a genuine case of peritoneal toxæmia. Surgical treatment has been most discouraging in acute peritonitis following upon gangrenous hernia, upon operation, and upon puerperal infection. It has met with but little better results in cases of perforation in which the serous inflammation has been well established. The somewhat imposing lists of cases of success after laparotomy for acute suppurative peritonitis afford sorry matter for congratulation when submitted to a careful scrutiny. The following may be cited as illustrative of this :—

Krecke gives a list of 119 cases of generalised purulent peritonitis treated by operation, and attended with only 68 deaths. In 18 instances the cause of the peritonitis was unknown, and in 36 cases it was due to trouble in the appendix, and it is among these 54 examples that the greater number of the successes are to be found. All the cases of peritonitis associated with hernia or with perforation of the stomach died.

Steinthal gives a list of 20 cases of perforative peritonitis treated by operation. There were 10 recoveries, but in no fewer than 7 of these cases the pus was encapsuled, and was apparently dependent upon perityphlitis ; at least it is stated that in 11 cases out of the 20 the perforation was in the appendix. Some of the cases are remarkable enough, but they are not examples of that form of generalised peritonitis which is usually associated with perforation.

Kaiser has collected 30 cases of operation in perforative peritonitis, with 11 recoveries. In 5 of the examples of cure the locality of the perforation was unknown.

Körti, after pointing out the fallacy of statistics, and the fact that the successful cases are probably all reported while the failures are commonly left in obscurity, gives a list of 40 consecutive cases operated upon by Mikulicz, Krönlein, and himself for purulent peritonitis. Out of this number there are

11 recoveries, and these include no fewer than 7 cases of perityphlitis.

Kriege gives a case of perforation of the stomach, which was treated successfully by an operation carried out 24 hours after the viscus was supposed to have given way, but in this instance there was no peritonitis. He incidentally alludes to 6 other recorded cases, all of which ended in death.

Some very excellent results have attended early operation for injury of the bowel and other abdominal viscera, but these results cannot justly be considered in connection with laparotomy for fully established peritonitis.

As to the actual mode of operating adapted for the different varieties of peritonitis, I would venture to draw attention to the following points. In all cases it is to be assumed that the skin over the operation area is cleansed and prepared in a suitable way, and that the surgeon adopts those measures which students, in their examination papers, are so fond of describing as "strict antiseptic precautions."

In cases of localised purulent peritonitis an incision should be made into the collection by the most direct route. When the pus has escaped, a rubber drainage-tube of suitable size and with stiff fenestrated walls should be passed to the bottom of the cavity. A dressing of some absorbent material, such as Tillmann's paper, sal alembroth, or cyanide gauze, is then applied. I have seen no advantage attend either the fuller evacuation of the pus by squeezing or the immediate irrigation of the cavity, and I am confident that distinct harm may be done by scraping the wall of the enclosure, by persistent searching for a diseased appendix or other cause of the trouble, and by stuffing the exposed space with a considerable quantity of gauze. At the end of twenty-four or thirty-six hours the irrigation of the cavity may be commenced and continued twice daily, and now and then a little iodoform emulsion may be introduced.

In some examples of perityphlitis a well encapsuled collection of pus is not exposed, but the knife enters into an ill-defined district containing a variable quantity of thin, greenish, and often offensive matter, which appears to saturate the tissues. In such circumstances I have been in the habit of using a drain composed of strips of iodoform gauze, which are carefully introduced into the lowest accessible recesses of the region.

In cases of generalised peritonitis, the procedure adopted must obviously depend upon the cause and degree of the trouble. If the exudation be serous it will suffice if the fluid be evacuated, if the peritoneal cavity be gently dried in its most dependent parts by means of gauze sponges, and if the abdomen be closed without drainage.

When the exudation is sero-purulent or purulent, it is in many cases desirable that the cavity be irrigated. The fluid which appears to be best suited for this purpose is a sterile 0·6 per cent. salt solution made warm. The details of irrigation will be discussed later on. After the washing the depths of the peritoneal cavity are dried, so far as is possible, with sponges ; iodoform powder is (except in children) dusted over the portion of the serous membrane most involved, a long, rubber, fenestrated drainage-tube may then be introduced, and the abdominal wound closed. Any treatment directed against the cause of the peritonitis will be independent of these measures. In the treatment of the ascitic forms of tuberculous peritonitis the best results have followed simple incision without either irrigation or drainage. The use of the rubber drainage-tube is apt to be followed by an obstinate sinus.

There are cases in which the peritonitis is more plastic in character. The intestines are found to be matted together with greyish lymph, which may be present in considerable quantity. The breaking down of these adhesions causes no little amount of bleeding, and such a step is evidently destructive of a certain desirable process of repair. Still, in order to search for the cause of the peritonitis, assuming such search to be indicated, and to set free an amount of exudation which is imprisoned between the attached coils, this freeing of adhesions must be at a certain, very limited extent carried out. There will probably be a sero-purulent exudation in the belly cavity, and the gentlest movements of the fingers among the recently attached intestines will set free more fluid, which will be probably less opaque. A clump of adherent intestines will often cover and protect a perforation, and the ubiquitous lymph will many times close such an opening with more speed and security than are provided by any system of suturing. As the surgeon, therefore, reaches what appears to be the starting point of the peritonitis, he must proceed with the utmost caution, and be not only prepared, but rather inclined to leave the actual *fons et origo mali* undemonstrated. The main purpose of the operation is to allow a noxious exudation to escape, and, if possible, to free the peritoneum of the cause of its trouble. In the class of case now under discussion, a perforation will be very often the starting point of the peritonitis ; the lapse of time and the plastic character of the inflammation afford evidence that the perforation is for the time being closed. If the operator can rid the serous cavity of the effects of the perforation, he may very often leave the breach itself to be dealt with by natural means.

The wisdom of doing no more than is necessary, or as little as is obvious, is well illustrated by these cases. It is a very

striking fact that some of the best results in the treatment of perforative peritonitis have been obtained in instances in which the exact site of the perforation was never ascertained. In Kaiser's statistics already alluded to there were six such examples, and of these five recovered. In this form of peritonitis a liberal dusting of the serous membrane with iodoform should be carried out (except in cases in children). Drainage is seldom required, and, when employed, is best provided for by strips of iodoform gauze passed among the intestinal coils to the necessary depth. Irrigation is certainly not suited to this class of case. Gauze mops or sponges in holders form the best means of clearing the peritoneum under the circumstances named.

It only remains to consider what means may be taken during the performance of an abdominal section to prevent the onset of peritonitis, and to discuss the two vexed questions of irrigation and drainage. "The Modern Laparotomy," as Döderlein presumes to call it in a recent elaborate paper, is a procedure which has evidently not yet reached the stage of recognised formulæ, nor attained to the position of a stereotyped process.

A perusal of the numerous writings upon the *technique* of the operation leaves an impression that the opening of the abdomen is still regarded with an almost superstitious awe, and if still approached by many with a fussy and meaningless ceremonial, that elaboration of detail may be carried to a degree which is merely fatuous, but that, although surgeons differ greatly in their methods, they differ but little in their results.

An infinitely elaborate *technique* is no substitute for lack of skill in operating, and the power of the human body to resist the effects of injury is not capable of unlimited extension by artificial means.

It is needful, in the first place, that the operation room should be surgically clean, that the patient should be clean, and that the operator should be clean. The attaining of this end appears to be as satisfactorily accomplished by the charwoman, the laundress, and the nailbrush, as by complex chemical processes. There seems to be no imperative need that the operation chamber should be capable of being washed out in the same manner as the interior of a cup, nor do results show that it should be so constructed as to be convertible into a vacuum or so ventilated as to admit only a stream of sterilised air. The skin over the abdomen can be prepared by a liberal scrubbing with soap and water, followed by washing with ether and the final application of a carbolic compress, which is applied some hours before the time fixed for the laparotomy.

Ligatures and catgut are, I think, best kept in an ethereal solution of corrosive sublimate. They can be dipped into sterilised water just before they are used.

The methods of rendering instruments surgically clean are legion. I adopt the practice of placing them in a 1 in 20 carbolic solution for fifteen minutes previous to the operation. Just before they are used the solution is diluted with sterilised water until it represents 1 in 80 or 1 in 100 in strength. To take an instrument direct from a strong carbolic solution and use it within the abdomen is to bring a caustic and damaging irritant into contact with the peritoneum, inasmuch as some of the solution must drop from the knife or forceps so employed.

Gauze sponges do fairly well for the peritoneum if properly prepared. They are best left to soak for some time in a 1 in 20 carbolic solution, which is very freely diluted with boiled water just before the sponges are passed through the roller. Ordinary sponges in holders are better adapted for the depths of the cavity. As they are not readily cleaned after use they are burnt as soon as they have been once employed. This disposes of many uncertainties.

It is obvious that the less the peritoneum is touched, stretched, rubbed, and handled the better. Now and then it may be desirable to repair, with a continuous suture, any rent made in its surface.

I have tried every method of closing an abdominal wound of which I have had any knowledge. I believe the best plan is to steady and straighten the wound edges with blunt hooks while the needle is being passed, to sew up the peritoneum with a continuous suture of fine silk, and to close the rest of the parietal wound with a single row of silkworm gut sutures which embrace all the soft parts, excepting the serous membrane, and which are passed by means of straight needles.

Any damaged surface of peritoneum should be well dusted with iodoform, and into the ragged cavity left after the removal of an adherent kidney or a sessile tumour a liberal quantity of the same powder may be introduced. I have reported certain cases which encourage the impression that some security against peritonitis is to be obtained by the free use of iodoform within the abdominal cavity. Iodoform should, however, not be used in the case of children, as it is very apt in them to produce symptoms of poisoning.

It is needless to say that the peritoneal sac should be left as dry and as clean as possible; that all bleeding should be carefully arrested, and all clots, pus, cyst fluid, and the like should be thoroughly removed. It is possible, however, that these ends may be attained at too great a cost, and that the "toilet of the peritoneum" may become a very uncouth and

barbaric process. Within certain limits, I believe it is often less injurious to leave some blood clot in the abdominal cavity than to persist in an obstinate determination to remove it at any sacrifice.

An ounce or so of cyst fluid in the peritoneal sac would, I think, do less harm than an attempt to complete the toilet of the peritoneum as carried out by a mechanically conscientious man. This toilet is often a Brobdingnagian affair and when strong antiseptics and countless sponges are employed it degenerates into mere violence, and is rather of the nature of an assault. If the infinitely tender character of the peritoneum be held in mind, this toilet—as sometimes practised—is comparable to the removal of a foreign body from the eye by means of a scrubbing brush and plenty of washing soda.—*British Medical Journal*, *March* 10, 1894, *p.* 518.

57.—ON THE RADICAL CURE OF HERNIA.

By W. Mitchell Banks, M.D., F.R.C.S., Surgeon to the Liverpool Royal Infirmary.

[Mr. Banks presents his statistics of the results of the operation by removal of the sac and stitching the pillars of the ring performed in 168 cases of strangulated and non-strangulated hernia in three tables. Table No. 1 shows 101 cases of non-strangulated herniæ of moderate size. Table No. 2 shows 16 cases of very large and enormous herniæ not capable of support by trusses. Table No. 3 shows 51 cases of strangulated hernia; 1 umbilial, 26 inguinal, and 24 femoral. Mr. Banks makes the following observations upon the cases in the tables:]

1. *Number of Cases and Selection of Patients.*—Since I first commenced, about the year 1880, attempting the radical cure of hernia I have only performed the operation 168 times: 117 times on non-strangulated, and 51 times on strangulated herniæ. If, during that period, all the patients who presented themselves at the Liverpool Royal Infirmary on my waiting days had been persuaded to come in and be operated upon, the number might very easily have been doubled. But I have always publicly expressed a strong opinion that no operation (except for very special reasons) should be performed on an adult who can keep up his rupture securely and comfortably with a truss. For I hold that a light and well-fitting truss is hardly any inconvenience to a patient, and is very far from being the bugbear which the advocates of the indiscriminate use of the

radical cure would make it out to be. As regards infants, I believe they may all be cured by well-fitting trusses. How many are operated upon in private practice? Hardly any. In hospital and dispensary practice, however, there are constantly found children whose mothers are so stupid and careless that they will not look after them at all, so that the ruptures become uncontrollable. Such are fit cases for radical cure. Of the 117 non-strangulated cases I can safely affirm that not one of them was operated upon who could wear a well-fitting truss, except in special cases, such as where a man was going abroad to a place where no medical help was to be had, or where he had some extremely violent labour to perform which might break down any truss, or where it was necessary for a public appointment that he should be entirely free from rupture.

The Nature of the Operation.—This has been the same in all cases. I make no claim to any originality in the matter, nor to any priority in time over anybody else. In femoral herniæ it has consisted simply in dissecting out and removing the sac as high up as possible. In inguinal herniæ in addition to this, the pillars of the external ring have been pulled together by two or three silver wire sutures, which are left in position after their ends have been cut very short. They thus constitute three small silver rings, which never appear again, and are less irritating than any other form of suture. I do not pull them in with any object of securing a permanent closure of the external ring, but simply to make sure that the hernia shall not descend for a considerable period, so that the inguinal canal (if it be in fairly normal case) may have a chance of contracting. Unless some extensive "rawing" of the walls of the canal is done, I believe all stitching of it to be of just as much use in procuring permanent union as stitching the edges of a cleft palate would be without freely refreshing them. I do not believe it possible satisfactorily to accomplish a "rawing" of the inguinal canal, while in a very large proportion of severe cases there is no inguinal canal at all; nothing but a big hole into which three or four fingers can be crammed, whose edges are as thin as cardboard, and from which all anatomical relations have disappeared. My reason for adhering to the operation which I have hitherto used is that it is the simplest of any that has yet been devised. Ruptured people are in every place and in every station of life. The operation for their cure should be such that not merely experts or specialists should do it, but that any surgeon to a cottage hospital should be able to perform it. During the last dozen years innumerable complicated operations have been invented, but I venture to believe that the simple operation which I recommend will survive them all by reason of its simplicity alone.

Division of Herniæ into Groups Depending on Size.—When considering the question of mortality, a division of this sort must in fairness be made, because the mortality in small and moderate sized herniæ—say those up to the size of a fist or somewhat larger—is evidently being reduced to a minimum. But with huge herniæ the danger becomes very great. This is chiefly due to the great area of loose cellular tissue opened into in removing the sac. In one case a huge volume of small gut had been down for a very long period. It had hypertrophied to the size of average great intestine, while the abdomen had so collapsed that by no efforts whatever could the bowels be pushed up. There was no room for them.

Statistics.—In the statistics, by "Quite sound," or "Complete success," is meant that the rupture has never come down since the operation, that there is nothing in the way of a swelling to be felt or seen, and that there is no impulse on coughing. By "Partial success," is meant that the rupture has slightly returned, or threatens to return if unsupported, but that, with the aid of a truss the patient is in safety and comfort. In many of these cases no truss at all would keep the bowel up before operation, while after it support could be effectively given. In every instance the patients placed in this category declared that they were in a distinctly better position after the operation than before it. By "Complete failure," is meant that the rupture is as big and as troublesome as before the operation.

Statistics of Mortality.—Among the 101 moderate sized non-strangulated herniæ two deaths are recorded. One was distinctly due to the operation. It was a case where there was a "land-slip" of the cæcum down into the scrotum, which is a very dangerous condition. The other was doubtful, as the wound was all but healed.

Of the 16 very large and enormous herniæ four cases proved fatal. Septicæmia killed two patients, and unsuspected abscess, bursting into the peritoneal cavity after the patient was walking about and deemed sound, proved fatal to the third, while in the fourth case the operation could not be completed.

Of the 26 cases of strangulated inguinal herniæ, an old man of 77 died from septicæmia and bronchitis. Of the 24 cases of strangulated femoral herniæ two died; one never recovered from the collapsed state in which she arrived at the infirmary, and another was moribund when admitted.

It will be seen, therefore, that the mortality of the radical cure in moderate sized herniæ has been 2 per cent., and of the strangulated herniæ 6 per cent.

Statistics of Permanence of Cure.—Of the whole 168 cases, it has been possible to trace for very considerable periods 113. Of these, 79 remain quite sound, 19 are partial successes, and 15

are complete failures. The majority of the cases occurred either in very degraded people who took no care of themselves, or in persons who had very severe work to perform, and began it too soon.

By far the greater number of cases on the lists have been traced for years. To report as successful those radical cures in patients who have just left hospital, or have only been out for a few months, is worse than useless, because it is misleading. Again, all the cases which had not in 1888 (when I made my last investigation) stood the test of some years, have been seen by myself or by a doctor within the last two or three weeks. When this sort of examination is made, it is astonishing how one's successes melt away. I entertain profound doubts of broad statements and general recollections. The surgeon who indulges in these has nothing but successful cases. I have heard that at the Surgical Aid and Truss Societies the number of persons with ruptures who come for trusses, after being radically cured, is very remarkable.

I have only to say, in conclusion, that I have endeavoured to put the matter as fairly as I can, and have tried to enter upon it without bias one way or the other.—*British Medical Journal*, *November* 11, 1893, *p.* 1043.

58.—RECTAL INCONTINENCE AND ITS CURE BY TORSION.

By Arpad G. Gerster, M.D., New York.

R. Gersuny, of Vienna, in Austria, described in No. 25 of the *Centralblatt für Chirurgie* of the year 1889, a novel and very ingenious process for the cure of vesical incontinence in women, which had yielded to him a brilliant success in one case. This process consisted in dissecting out of the entire female urethra, its torsion, that is, rotation around its own axis, and fixation of the twisted cylinder to the outer skin by suture. By establishing an elastic resistance, which could be overcome only by considerable intravesical and abdominal pressure, perfect continence was gained.

In July, 1893, F. F——, a boy, 7 years of age, was admitted to the German Hospital with prolapse of the rectum and incontinence of fæces, due to congenital defect of the sphincter. He was born with an imperforate anus, for which proctoplasty had been performed shortly after his birth. There was present a prolapse of a cylinder of mucous membrane of about five inches in length, and on account of the continual oozing of

fæces the child was excessively uncleanly. Remembering Gersuny's publication of 1889, I determined to try the identical method on the rectum. Accordingly, on August 12, 1893, the boy being anæsthetized, about two and a half inches of the lowermost portion of the rectum, including all of its coats, were freely dissected out. Then the free margins of the guts were secured at the four quadrants of its circumference by four artery clamps, and then twisted in an arc of 360 deg. I feared that this torsion would lead to an interference with the circulation of the gut, but the intestine did not change colour and its circulation remained unimpaired, whereupon it was stitched to the outer skin by a dozen silk sutures. It was exceedingly interesting to observe, on introducing the index finger into the anus, how great the resistance was that was offered. Though the wound did not heal entirely by primary union, the functional result was excellent, and both prolapse and incontinence were cured. I may add that the dissection was moderately bloody and not at all difficult. The patient was discharged on September 2, 1893.

Later on, in November, I had another opportunity to perform this operation, and while demonstrating the result to Dr. Lange, he informed me that someone had anticipated me in doing this same operation. Upon search, I found this verified by an article of Gersuny himself in No. 26 of the *Centralblatt für Chirurgie* of 1893, where he published the result of two successful cases of his own.

Let us now turn to the consideration of the group of cases of incontinence due to the absence of the sphincter. This most numerous group is made up of those instances in which the sphincter is extirpated by the surgeon in removing neoplasms of the rectum. Here torsion and fixation of the twisted stump will be an easy addition to the act of extirpation, or can be done later on with little risk, during or after the healing of the external wound. The amount of torsion required will be readily estimated by the resistance felt to the introduction of the index-finger. The smooth cylinder of the rectal channel will thus be converted into a rather close spiral twist, the conditions being parallel to those of a smooth-bore gun-barrel on one hand and of a rifle on the other. In leaving the twisted rectum the fæces will have to overcome the elastic resistance of normal living tissues, and must traverse the spiral course of a rifle projectile.

The second case operated on by myself and mentioned before was that of Mrs. Sarah G——, aged 41, who on February 21, 1893, underwent the operation of excision of the rectum for cancer at Mount Sinai Hospital. Four and a half inches of gut, together with the sphincter, were removed after excision of the

coccyx, and the stump was attached close to the sacrum. She made a good recovery. In November she presented herself again, complaining of incontinence due both to the absence of the sphincter and to a diarrhœal tendency. I found the anal aperture representing a flaring and wide funnel of mucous membrane, this excessive flaring being apparently caused by cicatricial retraction, its antero-posterior diameter being two and three-quarter inches, its lateral diameter two inches.

The advice to submit to Gersuny's operation was accepted, and accordingly this step was taken on November 28, 1893, at Mount Sinai Hospital. Dissection, the path of which lay mostly through cicatricial tissue, was remarkably unbloody. The peritoneum being incised, its free margin was stitched with catgut to the anterior aspect of the gut about three inches above the intestinal margin. After this the freed gut was twisted around its own axis in an arc of nearly 360 deg., and then attached to the margins of the external wound by a number of silk sutures. The wound healed in about three weeks. The patient's intestine is very sensitive to irritation, and in consequence of the absorption of mercury from the sublimate lotion used for irrigation during the operative work, a smart mercurial enteritis set in, which was overcome by the exhibition of opiates. There was considerable diarrhœa present, during which, however, the patient never failed to control her bowels. In presenting this patient I beg to direct your attention to the small amount of anal mucous membrane exposed; to the starlike concentric arrangement of the anal folds, very much resembling the aspect of a normal anus; and finally to the close apposition of these folds to each other. On introducing the index-finger about two inches, especially if this be done immediately following defecation, a resisting ring of elastic tissue is encountered simulating a sphincter. This resistant ring of tissue is apparently corresponding to the place where the fixed portion of the gut ends and joins the twisted part.

There the effect of torsion must be most pronounced. Gersuny also mentions this peculiarity in his two cases. *A priori*, it may be assumed on general physiological principles that a new resistance having been created, a compensating hypertrophy of the muscular elements of the lower portion of the rectum down to the twisted part would result after a while. Whether this hypertrophy would embrace the twisted part of the rectum also, increasing its resistance and improving its function, or not, would be very interesting to decide by observation.

In conclusion, it may be added that torsion might be applicable to any portion of the large intestine, provided that the gut be first cut across completely, and is freed of its mesenteric attachment to a moderate extent. The distal

segment can be either closed and dropped into the abdominal cavity, or can be attached to the margin of the external wound in the usual manner.

The great value of this simple and ingenious addition to the technique of intestinal surgery will be at once apparent to the practitioner, and its application in suitable cases can be warmly recommended.—*New York Medical Record, February* 10, 1894, *p.* 162.

59.—THE STATISTICS OF 181 CASES OF APPENDICITIS.

By Maurice H. Richardson, M.D., of Boston.

In the following statistics I have considered all my cases in which the question of appendicitis has been raised. I have not included those I have seen in consultation with my colleagues. The first ninety-three have been published in more or less detail in the "Boston Medical and Surgical Journal."

In many of the mild cases the diagnosis seemed sufficiently clear. Though some of them possibly were not appendicitis, the symptoms were sufficiently suggestive of that disease to raise the question of surgical interference. The most significant column is that containing the fatal cases in which no attempt could be made to save the patient. This list would have been much longer had I refused to interfere where death followed an operation performed as a forlorn hope. I have added the results in eight cases supposed to be appendicitis, but where some other acute lesion was found.

Of 181 cases, 130 were males and 51 females. The ages were :—Males : Between the ages of—1 to 10, 6 ; 10 to 20, 39 ; 20 to 30, 38 ; 30 to 40, 19 ; 40 to 50, 10 ; 50 to 60, 10 ; 60 to 70, 1 ; Age not given, 7 ; Total, 130. Females : Between the ages of—1 to 10, 6 ; 10 to 20, 10 ; 20 to 30, 7 ; 30 to 40, 11 ; 40 to 50, 5 ; 50 to 60, 5 ; 70 to 80, 2 ; Age not given, 5 ; Total, 51.

In 181 cases there has been a history of previous attacks in 46—one attack in 22 cases, two attacks in 5, three or more attacks in 19, and the number of attacks not given in 12 cases.

The number of operations followed by death in which the general peritoneal cavity was found infected at the time of operation was 24. In one case death followed from general peritonitis where a circumscribed abscess was carefully opened and drained, with no apparent general infection. Once death followed from general peritonitis after separating the firm adhesions of a circumscribed abscess. In two cases the patient died, some weeks after a successful drainage, with general peritoneal affection from a second abscess. In three a fatal

general peritonitis followed drainage among the healthy intestines. In one of these the abscess probably resulted from pylephlebitis, though the appendix was gangrenous.

In acute cases with operation and recovery there was a general peritoneal infection in nine cases; in drainage of abscesses the general cavity was infected more or less in 10; in 39 cases the general cavity of the abdomen was not opened.

In the whole number of 181 cases there were 43 deaths—a mortality of 24·3 per cent. In 107 operations there were 30 deaths—a mortality of 28 per cent. The number of operations where there was a general peritoneal infection more or less fully developed was 32; the number of recoveries was 9—a mortality of 75 per cent.

In practically all the fatal cases general peritonitis was the cause of death. The severity of the cases is well shown by the fact that death followed in most instances in a few hours. Life was rarely prolonged over forty-eight hours.

With one or two exceptions, the operation was performed immediately. Where I advised delay I was obliged to operate subsequently in two or three instances. In but one of these cases was death due to this delay; in the others a fatal general peritonitis was caused by the unavoidable infection of the general peritoneal cavity at the time of the operation. This infection would have taken place just the same at an earlier date, for both were circumscribed abscesses so situated that extra-peritoneal drainage was impossible.

In addition to the 181 cases of appendicitis, I have been called to eight patients in which it seemed probable that there was an appendicitis. In two there was an acute obstruction from a band; in two malignant disease was found; in a fifth there was general peritonitis from gonorrhœal infection; two were acute obstructions from omphalo-mesenteric bands; in one, operated upon by a colleague, the appendix was unaffected. Of the eight, two recovered—the unaffected appendix and one case of omphalo-mesenteric bands. Temporary recovery took place in one of the malignant cases. The others all died.

SUMMARY.

	Recovered.	Died.	Total.
Chronic cases, operation	15	...	15
,, ,, no operation	8	1	9
Acute cases, no operation	50	12	62
,, ,, operation	58	30	88
Recurrent cases, operation	4	...	4
,, ,, no operation	2	...	2
Appendicitis operated upon for acute obstruction	...	1	1
	137	44	181
Acute abdominal lesions mistaken for appendicitis	3	5	8
	140	49	189

—*American Journal of the Medical Sciences, January*, 1894, *p.* 22.

ORGANS OF THE RESPIRATORY SYSTEM.

60.—ON TRACHEOTOMY.

By Bernard Pitts, M.A., M.C., Surgeon to the Hospital for Sick Children, Great Ormond Street.

[The following is an excerpt from Mr. Bernard Pitts' address on the Surgery of the Air Passages and Thorax in Children.]

Tracheotomy has of late had a rival in intubation, but it seems likely to hold its place as the operation in most of the conditions of laryngeal obstruction. The results obtained by tracheotomy during the last few years have been more satisfactory, and the surgeon in recommending the operation has more confidence of saving his patient. In looking through the accounts of obstructed breathing twenty or thirty years ago tracheotomy seems to have been reserved as a last chance. Leeches were applied, and mercurial and other drugs were administered, and the operation was done when the strength of the patient was exhausted and the aeration of the blood was considerably interfered with. It was often done in a hurry, without proper precautions being taken as to the cleanliness of the neck, the tube or the instruments. Rapidity in opening the trachea was aimed at, and little attention was paid to bleeding until the tube was inserted. The tracheotomy tubes in use were so constructed as to make ulceration of the trachea very probable. Under exceptional circumstances any surgeon may be called upon to open the trachea in this manner, time not allowing of a deliberate dissection; but in the great majority of cases the respiratory difficulty developes gradually, and if the operation is undertaken before the patient is asphyxiated all this hurry and want of attention to detail are unnecessary and increase the risks very considerably. Early operation is particularly necessary in the case of diphtheritic obstruction, and relief should be afforded as soon as there is evidence of retraction of the ribs. There is rarely any great degree of mechanical obstruction in children without the soft and yielding framework of the thorax showing signs, certainly long before the rigid framework of an adult would be affected. The high operation is now almost universally practised in England in children who are suffering from œdema of the larynx from scald, simple or diphtheritic inflammation of the larynx, difficult breathing due to papillomata, or for any foreign body which may be impacted in the larynx. The low operation is reserved for cases of a foreign body in the trachea or bronchus and possibly for certain tuberculous and

syphilitic affections of the larynx. Unless contraindicated by the condition of the patient a little chloroform should be given, since its administration assists the operator considerably and it is not dangerous to the child if it be given sparingly and with judgment. The surgeon should have with him not the regulation two pairs of compression forceps, but half a dozen, just as if he was going to do any ordinary operation. After the skin and fascia have been divided it is unnecessary to use the point of the knife until the pretracheal fascia is reached, which must be divided so as to thoroughly expose the tracheal rings. By keeping exactly in the mid-line, the tissues are easily separated with the metal handle of the knife as it is now constructed. I fully agree with Whitehead in his opinion that an ordinary director is too sharp an instrument and that it is likely to cause bleeding, but the use of a special elevator is unnecessary and might induce the operator to use undue force and press upon the soft and yielding trachea, and it is obviously an advantage not to change from knife to elevator. The trachea having been freely opened and dilating forceps introduced, the operation is at an end if hemorrhage has been previously arrested by the compression forceps—at least, there is no necessity for the hurried attempts to introduce a tube. Having had the opportunity of watching a great many house surgeons in their earlier tracheotomies, the chief dangers have seemed to me to arise from too small an opening into the trachea being made and from too great a hurry to introduce the tube on the part of the operator. Sometimes the edges of the tracheal opening are bent in, the tube is passed, perhaps, into a space in front of the trachea or between the cartilages and their mucous covering, or as it is passed into the trachea it carries membrane before it. Time is then wasted in artificial respiration and all is excitement and anxiety, the very efforts made to relieve the child only increasing the respiratory difficulty. Occasionally the tube is not to hand, and the operator's thoughts are directed to the tube instead of to the patient. What I wish to insist on is that, after making the incision into the trachea, either the dilating forceps should be introduced or the sides of the opening held apart by hooks, and the operator should make absolutely certain that he has opened the trachea and that it is not blocked by membrane or by a foreign body. Blood should be permitted to escape by coughing and any imprisoned contents removed. The tube can then be inserted with gentleness and deliberation. Before commencing it is important to have the legs and arms sufficiently controlled by bandages, so that the struggles of the child during the later stages of the operation and when the effect of the chloroform has ceased may not interfere with the manipulations. The arms should, however, be secured in such

a way that they can be instantly released for the purposes of artificial respiration. Many of the details of the operation need not be referred to, since they are given at length in all the text-books. Retractors may be used at the discretion of the operator. If he has good assistants, who will use them properly and not pull the trachea out of place, they may be employed with advantage, but with unskilled assistants the surgeon had far better trust to his finger and thumb on either side of the incision. The isthmus of the thyroid may require division and this in children gives rise to no trouble if it is clamped on either side by forceps. The tube which is in general use at St. Thomas's Hospital is that devised by Durham and since its adoption the ulceration on the anterior wall of the trachea, which formerly was constantly found at the post-mortem examinations, is of rare occurrence. Parker's tube is more simple and less expensive, and is in general use at the Hospital for Sick Children, Great Ormond Street. Morrant Baker's rubber tube may be substituted a few days after operation if the secretions are normal, and in diphtheria if membrane has ceased to form.—*The Lancet, September* 16, 1893, *p.* 681.

61.—TRACHEOTOMY AND INTUBATION.

By Geo. W. Gay, M.D., Surgeon to the Boston City Hospital.

Previous to July 1, 1892, tracheotomy for croup had been done 514 times at the Boston City Hospital. One hundred and sixteen patients recovered (22 per cent.). Intubation has been done 502 times between December 31, 1886, and the above date. There were 91 recoveries (19 per cent.). In 58 instances both operations were performed, and only 7 recovered (12 per cent.).

A clearer statement of the facts would be as follows : primary tracheotomies 456, recoveries 110 (24 per cent.) ; intubations without tracheotomy 442, successful 90 (20 per cent.). This shows a difference of four per cent. in favour of the older operation.

Before the introduction of intubation 327 tracheotomies had been done and 95 recovered (29 per cent.). Since the new method came into vogue in this hospital in December, 1886, 129 primary tracheotomies have been done, with 15 recoveries (11 per cent.). During the latter period the ratio of recoveries under the various modes of treatment is as follows : intubations 20 per cent., primary tracheotomies 11 per cent., secondary tracheotomies 12 per cent.

In estimating the relative value of tracheotomy and intubation it is well to have a clear understanding as to the purposes for which these operations are done ; as to the definite results to be reasonably expected from them. In the great majority of cases of croup the result largely depends upon three conditions, to wit : laryngeal obstruction, bronchial croup and septicæmia. Now it is more than doubtful if either of these operations has any direct influence whatever upon the extension of the membrane, or upon the septic infection. They are done to overcome any obstruction to free and easy respiration located in the larynx, and no other direct result can reasonably be expected of either procedure. The type of the disease, more than all things else, determines the result of the treatment.

The great importance of giving relief to the laryngeal difficulty is indicated by the nature of the affection itself and also by the fact that life is prolonged, and more time is thereby obtained in which to combat the various complications. In very many instances the operations are successful and satisfactory, although the result of the disease is fatal. The patient succumbs to sepsis in some of its various forms or to some other complication, but has no more trouble from the dyspnœa. The operative or surgical part of the treatment was successful, in that it accomplished all that could have been expected of it, by overcoming the difficulty in breathing through the larynx.

Hence, I submit, that a more rational criterion by which to estimate the comparative merits of tracheotomy and intubation would be the amount of relief to the laryngeal dyspnœa resulting from each operation. Judged by this standard, rather than by the result of the disease, which operation gives the most satisfactory relief to the difficult and laboured respiration of acute laryngeal stenosis in children ?

Every one who has had much to do with tracheotomy, is familiar with the favourable change, which follows the introduction of the tube into the trachea, providing the obstruction is not too low in the air-passage. Unfortunately the respite after both operations is all too brief, but for some hours it is so striking that one needs to be on his guard as to the ultimate prognosis.

In 110 cases of the later intubations at the Boston City Hospital, a record of the immediate effect of the operation upon the dyspnœa was made, with the following results : In 75 instances the relief was immediate and complete : 22 patients were so much benefited that no further operative treatment was required. In 13 cases no relief was obtained by the laryngeal tube. In one instance membrane was pushed down in placing the tube. Immediate tracheotomy was done and the child recovered. In another favourable case it is doubtful if the tube

entered the larynx at all. In several of the cases little or no relief was obtained by opening the trachea after intubation, which is not an uncommon result, except in those instances of displaced membrane.

Any method of overcoming the dyspnœa of croup, which gives sufficient relief for all practical purposes in nine cases out of ten as indicated above, is worthy of our respect and consideration.

Does tracheal section relieve dyspnœa in those cases in which intubation fails ? That is the key to our subject and a correct answer will decide the question at issue. Should membrane be pushed down by the laryngeal tube and the patient be unable to expel it, then tracheotomy may be depended upon for relief. These cases, however, are not very common and there are not many exceptions to the rule, that if intubation does not relieve the dyspnœa, little benefit need be expected from tracheotomy. It is obvious that neither operation will do much good, if the obstruction is situated below the point reached by the tracheotomy tube which does not extend enough lower than the laryngeal tube to make any difference in the result. Cases of rapid or difficult respiration due to extension of the morbid processes or to sepsis, are not benefited by any method of treatment with which I am familiar.

Secondary tracheotomy has been performed 58 times in this hospital previous to July of this year. Seven recovered (12 per cent.). It will be noticed that the results of primary and secondary tracheotomies in late years are about the same, and are due to the fact that only the worst cases are subjected to this mode of treatment. Intubation, even if not successful, does not seem to lessen the patient's chances for relief, except in the gravest cases, when any disturbance may result in collapse. Except in those cases in which the laryngeal tube becomes occluded in its introduction, very little benefit resulted in many instances from opening the trachea, after a fair trial of intubation. It is best just to say, that the lack of skill and experience must be held responsible for some of the failures of the new method in the above cases, rather than the character of the operation itself. The failures of intubation were generally due to pushing down membrane, faulty introduction of tube, or to the obstruction being situated so low that no operation could give relief. In the great majority of cases the right tube, properly placed in the larynx, will afford adequate relief to the acute symptoms of laryngeal obstruction.

The fact that 502 intubations have been done at the Boston City Hospital during the past five and a half years, and only 129 primary tracheotomies, shows pretty conclusively, that the new operation has supplanted the old one to a very considerable extent in that institution. Intubation, as a rule, is the primary

operation, and only in case of failure, is the trachea opened. Considering the large number of surgeons who have charge of our diphtheria wards at different times, it is remarkable to what an extent this operation is performed. There is necessarily a personal equation in these matters, and unless a particular mode of treatment has much in its favour, it is hardly to be expected that a dozen different surgeons would resort to it year after year in preference to its old and well-established rival. Such are the facts, and the lesson is unmistakable.

Intubation is by no means a perfect method of relieving laryngeal obstruction. That is yet to be invented. But it has sufficient advantages to give it a permanent place in the treatment of this affection. It will never entirely supplant tracheotomy, as the latter possesses some desirable features which cannot be claimed for the former. The most important of these is the facility of swallowing. The dysphagia is the most serious objection to intubation. In a small number of cases it is difficult to get the patient to take sufficient food and stimulants by reason of the choking at every attempt to swallow. A good nurse possessing tact and perseverance can overcome this difficulty to a great degree, but unfortunately such a person is not always attainable. In a hospital this objection does not have that importance which appears in private practice. In a large proportion of cases, however, the difficulty is not great enough to lead one to abandon the plan of treatment.

Among other objections to the laryngeal method are the facts, that occasionally the tube is coughed up repeatedly; that it becomes occluded; that there is no expectoration; that for some reason, not always apparent, it does not relieve the dyspnœa; and, finally, that the tube can not always be introduced into the larynx. While it is true that all of these complications are met with, yet they are not sufficiently common, nor so difficult to overcome, as to lead any one, who has had a fair amount of experience, to give up the method. Tracheotomy is by no means free from complications, such as hemorrhage, sudden blocking up of tube, shock, &c.

That any one with reasonable dexterity, who has done both operations a good many times, should consider the new one the more difficult to perform, is beyond my comprehension. One requires from five to ten minutes including the time necessary for preparation; the other from half an hour to an hour. In the new operation no anæsthetic is required; the light is of secondary importance; there is no hemorrhage, and except in the worst cases little danger is to be apprehended from shock.

Unless one's early experience with intubation has been peculiarly favourable, he is prone to condemn the method upon insufficient evidence. Croup is not an easy disease to manage

by any method known to the profession, and the new one is no exception to the rule. A fair amount of skill, perseverance and experience are requisite for a satisfactory management of these cases. From thirty to fifty examples of each operation are necessary to enable one to form an intelligent opinion of the advantages and disadvantages, the accidents and complications incident to each. Personal peculiarities will always be a factor in choosing the method of treatment. But the strongest advocates of intubation will be found among those who have had the largest experience, which is the best and safest of all teachers.—*Boston Medical and Surgical Journal, October* 19, 1893, *p.* 388.

62.—ON THE SURGICAL TREATMENT OF EMPYEMA IN CHILDREN.

By Bernard Pitts, M.A., M.C., Surgeon to the Hospital for Sick Children, Great Ormond Street.

The best results are to be obtained in the treatment of empyema in children by early free incision and effective drainage; but there are differences of opinion as to how this can be most effectively carried out. Aspiration in the majority of cases can only be regarded as a temporary measure, and if persevered in has usually to be supplemented by incision. It is undeniable that certain cases of empyema become perfectly well after repeated tappings, but failure is to be expected as the rule, and in consequence of the delay entailed the lung has a much smaller chance of satisfactory expansion. Aspiration is most likely to have a satisfactory result when the effusion is sero-purulent in character or very localised. Rapid reaccumulation, increasing severity of the symptoms, or the effusion becoming thicker in character are indications for more active treatment. Besides failing as a curative measure aspiration has its own special disadvantages. Occasionally it fails to evacuate the pus owing to some defect in the working of the instrument or from the amount of solid material present; and the puncture may be followed by hemorrhage into the pleural cavity, by leakage or by emphysema. In a case reported by Dr. Evans exploration with the aspirator was followed by subcutaneous emphysema extending over the trunk, scrotum and face. For mere exploratory purposes a large syringe made on the same principle as a subcutaneous injecting syringe is preferable, and when pus is found in the pleural cavity I would

strongly favour under most circumstances its free evacuation without further delay. In children the removal of a portion of a rib has no disadvantages and many advantages, for without it satisfactory drainage by a soft tube is impossible in young children and particularly in chronic cases, where the ribs are crowded together. A silver tube is painful and apt to produce caries of the ribs by pressure. The great advantage to be gained by removing a piece of rib is that the pleural cavity can be thoroughly explored with the finger, adhesions imprisoning remote collections of pus can be broken down and solid masses of lymph can be removed. There is very little increase in the shock of the operation, and the dressings and management of the tube are attended with much less discomfort to the child. Experience has proved that there is no increased risk of pyæmia and very little danger of necrosis of the cut ends of the rib. After a considerable experience of rib resection in empyema I have never had reason to regret doing it, and in a large proportion of cases I am sure that the cure has been hastened by the immediate removal of coagulated exudates. Occasionally it may happen that the condition of the child makes it appear desirable that a simple incision without chloroform should be made, but with care in administration of the anæsthetic and attention to the position of the child during operation no such exception need be made. The removal of a piece of rib adds, perhaps, two or three minutes to the length of the operation. The perosteal elevator should be used with gentleness, or the pleural cavity may be opened prematurely. About one and a quarter or one and a half inches of the selected rib are sufficient to remove, and in children this can easily be done with suitable cutting forceps, taking care that all that part of the rib which has been denuded of periosteum is taken away and that the forceps are sufficiently sharp to avoid bruising or splintering the bone. When the rib is excised for drainage it is not necessary or advisable to remove any of the periosteum in ordinary cases. For the drainage, however, of very chronic empyemata, where the pleura is much thickened parts of two or three ribs may be taken away with the corresponding periosteum and pleura, so that a free opening may be maintained for a lengthy period. I am not speaking now of Estlander's operation, which is performed for an entirely different object and is never required as a primary measure. For reasons pointed out by Mr. Godlee, an opening just below and anteriorly to the angle of the scapula is best when the empyema involves the entire pleural cavity, but in each individual case the position must be selected according to the physical signs, and occasionally a more anterior opening may be required.

After the rib has been excised a narrow-bladed knife is introduced at a point corresponding to the mid-line of the rib, and as pus escapes the incision is enlarged. It is easy to regulate the escape of the pus, and the finger should not be introduced until the cavity is nearly empty. If the breathing or pulse is in any way unsatisfactory an antiseptic compress should be placed over the opening, the patient should be turned on to the affected side and time for recovery should be allowed. The exploration with the finger must not be attempted if there are indications of general hemorrhage from the pleural surfaces, but when permissible every part of the cavity should be gently explored and mopped out with wool sponges firmly held by forceps. If the child is taking the anæsthetic well and has no paroxysmal coughing and also if there is reason to believe that no communication with a bronchus exists, irrigation with a warm boracic solution will make the toilet complete. In the majority of cases, however, irrigation is not advisable, and no such special advantage is likely to accrue from it as to render it desirable to run any risk of fluid finding its way into the tubes. After a suitable drainage-tube has been inserted and made secure absorbent dressings are applied, wood-wool tissue making a convenient and economical application. The dressing should be changed in a few hours, and afterwards at least once a day while the discharge is free. In uncomplicated cases the tube may often be dispensed with from the third to the tenth day, but a director should be afterwards occasionally inserted to make sure that no reaccumulation is taking place. The best indications for leaving out the tube are the temperature and the amount and character of the discharge. The discharge, when all causes of irritation of the pyogenic membrane have been removed, may at once cease to be purulent and become serous. This, perhaps, is the best indication for leaving out the drainage-tube. After-irrigation of the cavity is very seldom necessary or advisable, and should only be done if the discharge remains or becomes very offensive. Sometimes, several weeks after the wound has apparently healed, a superficial abscess appears under the cicatrix, containing a few drachms of pus. Such a local abscess heals quickly after incision. The chief conditions which may retard or prevent convalescence or cause death are:—(1) Profuse and long-continued discharge from the empyema becoming septic, either from a communication with the bronchus or rarely with the œsophagus, or by want of attention to detail in the cleanliness of the operation or after dressing of the wound; (2) the character of the empyema, especially when it arises from a tuberculous abscess of the lung or a suppurating bronchial gland. It may be in connection with a carious rib or disease of the spine. In exceptional cases the empyema may

be pyæmic in origin, or it may depend on some foreign body, or on fracture of a rib or on an extension of an abscess from some other part (such as the liver) into the pleural cavity. As will be shown by statistics, cases are not infrequently complicated by pericarditis or peritonitis from an extension of the inflammatory condition. The case may be complicated by having a collection of pus shut off from the general cavity by adhesions or by continued or consecutive trouble in the lungs. Time will only allow of a bare enumeration of these conditions, but it is necessary to consider at greater length a very important and common cause of the discharge continuing—viz., the inability of the lung to expand and of the cavity to contract so as to become obliterated. In early life the ribs are soft and pliable and the thoracic wall falls in more readily than in adults ; but in certain cases, owing to long previous pressure on the lung and great thickening of the pleura, it is impossible for the lung to expand, for the diaphragm to rise, and for the chest wall to fall in sufficiently to allow of a complete cure. Unnecessary interference in slowly contracting cavities is unwise ; time must be given for the wonderful reparative and adaptive powers which children possess to exert themselves, and extensive operations for the purpose of closing the residual cavity should only be undertaken after careful consideration of the particular case. Only disaster may be expected when the case is complicated by tuberculosis or by many of the special conditions which have been enumerated as tending to prevent or retard cure. If, however, the child is in fair general condition and it is clear that the obstacles to obliteration of the cavity are mechanical active interference and free removal of a portion of the thoracic wall are followed by great improvement and often by complete success. When the residual cavity is comparatively small the removal of portions of two or three ribs, with scraping of the interior of the cavity is generally sufficient.

The following is an abstract of a table of 86 cases of empyemata treated at St. Thomas's Hospital in the years 1880 to 1892 inclusive:—Of the 86 cases 20 were fatal; 4 were cases of double empyema, and of these 2 were cured by resection of the rib on both sides; 1 ended fatally without operation, and 1 was fatal from diphtheria after resection of the rib on one side and incision on the other ; 2 of the 86 cases were really sub-pleural, not pleural collections of pus: of these, 1, due to fractured rib, recovered; the other, due to phthisis, ended fatally. In this case the pleural surfaces were adherent and the abscess was very large, involving the whole side of the chest from the apex to the base and from the heart to the spine, and was situated between the pleura and the ribs.

Ages of Cases.—Under 1 year old 6, or 66 per cent. fatal; 1 to 4 years old 22, or 40 per cent. fatal; 4 to 10 years old 46, or 10 per cent. fatal; 10 to 16 years old 12, or 16 per cent. fatal.

Operations.—The following operations were performed:—54 resections on 52 patients, 18 incisions on 18 patients, and 12 patients treated by aspiration alone; 5 of these died. The causes of death in the 20 fatal cases were:—Tuberculosis, cellulitis, abscess of brain, amyloid disease, bronchitis, 1 each; diphtheria, 2; pericarditis and broncho-pneumonia, 2; pericarditis, 3; broncho-pneumonia, 3; pericarditis and peritonitis, 1. In 4 cases a necropsy was made. In 8 cases the pus formed a distinct localised swelling externally to the ribs previously to operation. Number of double empyemata, 4; of the right side, 30; of the left side, 52.

Cases of Empyema Treated by Free Opening and Drainage at the Hospital for Sick Children, Great Ormond Street:—

1880	Simple incision	4	recovered	4	relieved	4 died.
1881	,, ,,	9	,,	1	,,	5 ,,
1882	,, ,,	6	,,		—	—
1883	,, ,,	9	,,	9	relieved	2 died.
1884	,, ,,	7	,,	3	,,	2 ,,
1885	,, ,,	16	,,	1	,,	3 ,,
1886	—	7*	,,	3	,,	,,
1887	Rib resected	12	,,	3	,,	2 ,,
1888	,, ,,	15	,,	2	,,	8 ,,
1889	,, ,,	14	,,		—	—
1890	,, ,,	15	,,		—	7 died.
1891	,, ,,	18	,,		—	2 ,,
1892	,, ,,	21	,,	2	relieved	4 ,,

85 cases treated by incision with 51 recoveries, 16 relieved, and 16 deaths.
129 ,, ,, by rib resection ,, 99 ,, 7 ,, ,, 23 ,,

* Rib resected in 4 of the cases, with recovery.

From the post-mortem records of the Hospital for Sick Children, Great Ormond Street, I have examined 54 cases; 12 of these had been treated by aspiration, 31 by free incision and 31 by incision together with excision of rib. The children were very young. There were under 1 year, 6; between 1 and 2 years, 17; between 2 and 3 years, 11; between 3 and 4 years, 8; between 4 and 5 years, 6; between 5 and 6 years, 3; between 6 and 7 years, 0; between 7 and 8 years, 2. Some of the patients died a considerable time after the operation, but all had evidence of some empyemic trouble remaining. The empyema was on the right side in 24 cases, on the left side in 28, and on both sides in 2. Twenty of the cases were found to be tuberculous in character, as evidenced by tubercles found in the lungs or other organs, caseating glands, or caries of the spine. Marked pericarditis was found in 9 cases, and in 4 of these the pericardium was distended by several ounces of purulent fluid; in 7 of the 9 the empyema was on the left side,

in 1 on the right side, and in 1 it was double. Peritonitis was present in 5 cases, and was most intense just beneath the diaphragm and about the spleen. The pericarditis and peritonitis appear to have been direct extensions of the inflammatory process. In only one case was cerebral abscess found; the abscess was in the left frontal lobe and contained three ounces and a half of pus. The empyema was on the right side and had been treated only by aspiration, the first aspiration being made three months before death. Only one case died at the time of operation—viz., a child of 1 year and 7 months, and it is not certain whether death was due to chloroform or to syncope from the sudden release of pressure. The majority of the cases died after an interval of some weeks or months after the operation. Necrosis of rib as a result of the excision of rib was only found in 1 case. In 3 treated by simple incision caries of ribs produced by pressure of the drainage-tube was present.

When empyema in children is simple in character and not complicated by tuberculosis or other unfavourable conditions, it will, if treated by effective and early drainage, get rapidly well. If, however, for some unfortunate reason surgical interference is delayed the recovery may be tedious. Some years ago I was about to operate on an apparently healthy boy 9 years old for cleft palate, but he took the anæsthetic so badly that he was put back to bed unoperated upon. The same night his temperature was high and he had a rigor and within two days there were signs of fluid in the left pleura. Some ounces of sero-purulent fluid were withdrawn by the aspirator; two days later the temperature was still high and fluid had re-collected, and on exploration it was found to be purulent. A resection of rib was performed at once and eighteen ounces of pus were evacuated. Within a fortnight the boy was convalescent and the operation wound soundly healed. I mention this as an example of what may be expected if immediate surgical assistance is rendered. In cases of double empyema the necessity for early interference is even more indicated so as to give the lungs the best possible chance to expand. It is generally considered wise to wait a few days after opening one side before attacking the other. Good results have, however, been recorded when both sides have been opened at the same operation. Two good examples of recovery a considerable time after the operation for double empyema have been referred to amongst the 26 cases examined at the Hospital for Sick Children, Great Ormond Street, and it will be noted that of four patients at St. Thomas's Hospital two were cured by resection of rib on both sides, one died without operation and one died from diphtheria contracted during convalescence after operation.—*The Lancet, October* 14, 1893, *p.* 917.

ORGANS OF URINE AND GENERATION.

63.—ON EXCISION OF THE BREAST.

By W. Watson Cheyne, M.B., F.R.C.S., Professor of Surgery in King's College, London.

In excising the breast for cancer, we must, in the first instance, remove the whole breast, and in this connection we must bear in mind the facts which have been admirably demonstrated by Mr. Harold Stiles that the breast is a much more extensive organ than has been supposed, and that if only the prominent breast is removed, a ring of lobules will be left all around which may contain infective material and subsequently give rise to disease. In order to remove the whole breast, which extends over the greater part of the front of the thorax, it is necessary, or at any rate advisable, in all cases to remove the skin co-extensive with the prominent part of the breast. No definite skin incisions can be described, because skin must never be dissected from over a tumour on account of the fibrous bands running to the skin to which I have already referred; where tumours lie towards the edge of the breast, special incisions must be made, not only to take away the skin over them, but for a considerable area around them. Further, the pectoral fascia must be removed coextensive with the breast and this is readily done by taking a thin layer of the muscles along with it. Then, lastly, the fat and fascia leading from the breast to the axilla, and the whole of the fat and glands in the axilla, should be dissected, not pulled, away in all cases. I do not propose here to go into the question of what should be done in advanced cases, but I may say that when the tumour is at the inner end of the breast, the incision should be carried well over the sternum, and the fat and fascia extensively removed in that region. In the great majority of my cases, I have been able to stitch up these wounds completely after undermining the skin, and using button and wire sutures; if any small area is left, it can be readily covered by a few skin grafts.

I have not myself a large number of cases to bring forward, but I shall mention the results of the first 20 cases on which I have operated in this thorough manner. I take the first 20 because the remainder have been operated on too recently to be of value. I began operating in this thorough manner in the beginning of 1890, and the first 20 cases in which I did the first operation (I am not referring to operations on cases of recurrence operated on in the first instance by other surgeons) bring me down to near the end of 1892. Thus, in all over a year and in some from three to four years have elapsed since the operation.

Of these 20 cases, 14 remain well, and 6 have recurred. But it will be better to consider only the cases operated on in 1890 and 1891, that is to say, cases in which more than two years have elapsed since the operation. Of these there are 15, of which 10 remain well, and 5 have recurred and the patients have died of the recurrence. This would give a percentage of over 66 per cent. of cases remaining well for over two years. I may mention the length of time which has elapsed in each of these 10 cases: 4 years, 3 years 8 months, 3 years 3 months, 2 years 11 months, 2 years 10 months, 2 years 3 months (2 cases), 2 years 2 months, 2 years 1 month (2 cases). In the cases which recurred, the disease reappeared in a year or less, except in one case where nearly eighteen months elapsed before internal cancer was diagnosed. Now, I do not for one moment mean to say that all of the 10 cases still free from disease after two years or longer will permanently remain so, nor that 66 per cent. is anything like the proportion of permanent recoveries that can be hoped for, but between 66 per cent. and 10 per cent. there is a great interval, and several of these cases might recur and still leave a better percentage than that got by the older methods of operating; in fact, only one need survive to give a result very much like that obtained by the old method, and I do not think I am too sanguine in thinking that more than one will remain free from disease. We know that where local recurrence takes place it usually does so within the first year, and Volkmann has formulated the following law, founded on his experience; "When, after an operation, a whole year has elapsed without recurrence one may hope for a permanent cure; after two years this cure is probable; at the end of three years it becomes almost certain." Of these 15 cases, 5 were operated on more than three years ago, and of these 3, or 60 per cent., remain well, and come under the third part of Volkmann's law which says that cure is almost certain. I would further remark, with regard to these cases, that none of them were early cases; in all the axillary glands could be felt enlarged before the operation and were found to be diseased at the time. I may, however, remark that in some of the cases the disease had been progressing slowly. As local recurrences are always due to disease left behind it is only what we should expect that the freer the operation the more likely one is to have removed all the disease. Of course, if the infection has passed beyond the axillary glands no extent of operation will remove the disease, and that, of course, brings us back again to the advisability of early operation. It seems to me that the pathological and clinical facts being as I have stated, even those who adopt the constitutional view, and who only operate with a view of prolonging life, must also adopt the more thorough operation.

The objections which are mentioned against the complete operation are mortality and interference with the freedom of movement of the arm. As regards the question of mortality, if the operation is performed aseptically the mortality will be very small, and may be neglected. In all my cases of excision of the breast, which, including extensive recurrences and some not so complete as above described, number about 50, I have only lost one case. This was a lady operated on a year ago for very extensive and immediate recurrence after excision on the old lines by another surgeon. I had not only to remove the greater part of the skin from the side of the chest, but also the pectorals, all the axillary fat and glands, and some glands from the neck; in fact, had I had any idea before I began that the disease was so extensive, I would not have operated. She developed pneumonia on the side operated on immediately after the operation, possibly as the result of the exposure in the cold weather, and died in a week. Allowing for accidents such as this, I do not believe that the mortality after the complete operation ought to be more than 2 or 3 per cent. if proper antiseptic precautions are taken. As regards the movement of the arm, there is no doubt a certain amount of restriction of movement after thoroughly clearing out the axilla, but all my patients can at least do their back hair afterwards.

With our present knowledge we can no doubt operate on more extensive cases than formerly with a fair prospect of success. At the same time I doubt if those very extensive cases in which the pectorals have to be removed or the clavicle divided are really suitable, and I should not myself advise operation in cases in which enlarged glands could be felt above the clavicle, in which several nodules can be felt in the muscles, in which there are numerous scattered nodules in the skin, or in which there is œdema of the arm, with pain down the arm, implying adhesion to the structures in the axilla. As to atrophic cancer, I see no reason why it also should not be removed unless the patient is very old and feeble.—*British Medical Journal, February* 10, 1894, *p.* 290.

64.—THE CAUSATION AND TREATMENT OF HYDROCELE AND HERNIA IN YOUNG INFANTS.

By W. Arbuthnot Lane, M.S., Assistant Surgeon to Guy's Hospital.

I propose in this short communication to call attention to what I believe to be the most common cause of hernia and hydrocele in young infants, and I do this because I find that

few, if any, authorities writing on hernia or hydrocele occurring at this period of life lay any stress whatever upon it as a cause, if they even regard it as a predisposing factor at all.

Flatulence, which is often considerable, causes first a yielding of the umbilical cicatrix, with the formation of the protrusion of skin filled with bowel or fluid with which we are only too familiar. I would like to say a few words about the presence of fluid in the peritoneal cavity of the infant which is suffering from the results of bad feeding. I have observed in operating on hernia in such cases that a variable, but distinct, quantity of serous fluid existed, while in operating on the abdominal cavity of a child which was supplied with suitable food at proper intervals I have not noticed any fluid present. How far a certain amount of serous fluid is normal to the healthy peritoneal cavity of the infant, and how much is due to the irritation resulting from chronic indigestion, I cannot say with certainty. Arguing from analogy with the more commonly observed conditions in the adult would strengthen the opinion that irritation and distention of the intestinal canal of any duration is accompanied by more or less serous effusion, and this is more likely to be the case in the young infant than in the adult.

As time goes on, the same increased intra-abdominal tension results in the protrusion of bowel along the inguinal canals, especially on the right side, and in the forcing of fluid along the processus vaginalis, thus forming the several varieties of hydrocele seen at this period of life. In some of the cases that are classified as hernial protrusions, the sac appears to contain fluid only, and in others fluid and bowel. It is obvious, therefore, that the sole cause of the development of both these inguinal protrusions, whether hernial or hydrocele in character, is a simple mechanical one, as in the case of the corresponding stretching of the umbilical cicatrix.

My experience of the usual treatment of these conditions is that the surgeon who sees them is quite satisfied with ordering a truss, or, in the umbilical variety, if a truss is not ordered, an attempt to intrude the protrusion into the abdomen is made by strapping with or without a pad. The results of such treatment, as seen in the out-patient department of a children's hospital, shows that it is almost useless. With very few exceptions, I have found that both umbilical and inguinal hydroceles and hernias in young infants disappear spontaneously after the child has been fed properly for a time.

I do not wish to suggest that in many cases the constant application of pressure by means of a suitable truss will not very often hasten the disappearance of the hernia or hydrocele, but the reduction of the abnormally excessive intra-abdominal

tension resulting from indigestion must be the chief consideration, while the local pressure which is exerted on the aperture in the abdominal wall with the object of retaining its protruding contents must be regarded as only an adjuvant. The reason this treatment occasionally fails in out-patient practice is that it is hopeless to make some parents understand the importance of feeding their children properly, or they may be so circumstanced as to be unable to give the infant the attention it requires. I think I have now shown that it is unwise to rest satisfied with treating such cases with a truss alone, whether applied constantly in the form of a washable truss or, as is almost always the case, the mother is directed to remove the truss at night time and when the child is being washed.

I have heard of surgeons stating that they have never seen a hernia in a child, however young, which could not be treated by means of a truss. I fancy that they meant that a skilled surgeon can in any case apply a properly made truss of suitable size and material to a child in such a manner that the instrument will retain the contents of the hernial sac within the abdomen during the few minutes the child is under the surgeon's observation in the room, and one would readily allow that the slighter forms of hernia will recover under this treatment alone, since there exists a very strong tendency to their spontaneous disappearance.

My almost invariable experience of cases in which the hernial contents are retained with difficulty is that unless the child's feeding is attended to, in a very short time, even assuming that the truss does keep the hernia up, the irritation produced by the pad or some other portion of the truss soaked and rendered rough and irritating, produces an eczema by its pressure on the very sensitive skin of the lowly-vitalised infant. We all know how very readily thin, badly-fed children develop inflammation of the skin from any local irritation. As an illustration of this I would point to the almost constant presence of phimosis which exists among them and which is the product of a chronic inflammation of the end of the prepuce due to its being constantly moistened with urine (which itself possibly is irritating in character as the result of bad feeding) and to subsequent contraction of the inflamed orifice. Some surgeons have been so far misled by the frequent association of phimosis with hernia as to suggest that the hernia is produced by the phimosis on the supposition that the child strains forcibly to pass its urine through a constricted orifice. I would, however, willingly admit that a phimosis developing in the manner above described may be so extreme that the straining necessary to drive urine through it will assist the exaggerated intra-abdominal tension in developing a hernia, or in increasing one already developed, or

may oppose the recovery of one even when the child is properly fed. It serves as an interesting example of how ready we are to mistake one effect as the cause of another—a very common fallacy in surgery as well as pathology.—*British Medical Journal*, *November* 25, 1893, *p.* 1145.

65.—ON AXIAL ROTATION OF THE TESTIS.

By Edmund Owen, F.R.C.S., Surgeon to St. Mary's Hospital.

[Mr. Owen records a case of axial rotation of the testis occurring in a boy of thirteen years. The symptoms and appearances were very much those of acute strangulated hernia. Mr. Owen operated and removed the testis with a good result. We reproduce here Mr. Owen's remarks upon the subject of axial rotation of the testis, based on the hitherto recorded cases.]

Though potential gangrene of the testicle, as the result of rotation of the spermatic cord, can evidently not be a new disease, yet it is only since the publication of Mr. Gifford Nash's account of Mr. Whipple's case, and of Mr. Bryant's paper read at a meeting of the Royal Medical and Chirurgical Society, that attention has been specially directed to the subject. Since then several similar cases have been brought to light, and I propose very briefly to detail the features of chief importance in each of these records. Mr. Whipple's patient was a boy sixteen years of age with an undescended testicle on the left side. He felt something give way on straining, and, having vomited, he was sent to the Plymouth Hospital as a case of strangulated hernia. The swelling was hour-glass in shape, of which the upper part, against the external ring, proved to be a strangulated, claret-coloured epididymis, while in the lower part of the sac was the testis. The sac contained blood-stained fluid and a piece of omentum. "The epididymis appeared to be twisted twice on its own axis," but the direction of the twist is not stated. The swollen tissues were removed, and a radical cure of the hernia was effected. The boy left the hospital in less than three weeks. The specimen is in the museum of the Royal College of Surgeons of England. Mr. Bryant's case was reported to the Royal Medical and Chirurgical Society on February 23rd, 1892. A boy fifteen years of age had a swelling in the left inguinal and scrotal regions, with symptoms suggestive of strangulated hernia. On opening the vaginal sac black blood escaped . . . The strangulated testis was "coal black." The cord had undergone three half-twists outwards. The testicle was saved but it atrophied subsequently. On the same occasion Mr. Bryant

reported the case of a man aged 23 years who had been treated by Professor Keen, of Philadelphia. He had from birth been troubled by a reducible hernia and an undescended testis on the right side. On exposing the tender swelling he found a considerable extravasation of blood. "The testicle had been rotated three half-turns," but in which direction the report does not state. Professor Keen tied the cord, removed the testicle, and effected a radical cure of the hernia. The blood-vessels of the testis were thrombosed, and many of them were ruptured. Mr. Davies-Colley's case was that of a boy fourteen years of age with an undescended testicle on the right side, which, at the operation, was found to be twisted "three turns" to the patient's left—that is, inwards. The operation was completed by stitching the "black mass" in the scrotum. There was no hernia or funicular process. "The greater part of the testicle sloughed away."

Mr. Herbert Page's case was that of a lad seventeen years of age who had been in the habit of wearing a truss for a congenital hernia on that, the right, side. On cutting down, the testis was found to be gangrenous, the cord being twisted two turns, as in driving in a screw—that is, the cord was twisted inwards. Mr. Page removed the testis and occluded the funicular process. The case did well (the pathological specimen was shown at the meeting). The enlargement shows that though the twist sufficed to prevent the return of venous blood it did not cut off the arterial supply. In my own preparation, however, although there was but a half-twist, it was so sharp as to arrest both the venous and the arterial flow, the epididymis and testis being, in comparison with those in Mr. Page's preparation, but little increased in size. Twelve years ago Mr. Langton reported a case of a somewhat similar, if not identical, nature. A painful tumour of the size of an orange suddenly appeared in the left scrotum. There had been no injury. "The cord is free and normal above the enlarged testis." The tunica vaginalis (which was unusually extensive) was incised, and blood escaped. The epididymis was "almost black." "Its upper part presented a deep constriction, as if twisted upon itself. An attempt was made to untwist it, but without success ; for the appearance was as if the entire viscus had been twisted upon its own axis and that blood had been rapidly effused into the epididymis, constituting, in fact, an apoplexy of this body." The testis and epididymis sloughed away, and the man left the hospital in the fifth week.

Mr. Gifford Nash recorded a case which occurred in his own practice. A youth nineteen years of age, after a bout at boxing, sat down to tea. Soon afterwards he found that he had pain in his right testicle, and, as is usual in these cases, he

vomited. Mr. Nash saw him within two hours after the appearance of the first symptoms and found the testicle and the epididymis to be swollen and tender. They were in the normal scrotal situation, but the epididymis was anterior, and as he could make out a tender knob or kink in the cord he rightly thought that he had another instance of axial rotation of the testis to deal with. Without a cutting operation he promptly and smartly rotated the testicle inwards, leaving the epididymis posterior. At once pain ceased, the swelling began to subside, and the patient was relieved and happy. (It would be very interesting to know later whether the testicle received any permanent damage from this brief but serious disturbance of its nutrition.)

Mr. Barker published a case of strangulation of the testicle. The subject was a boy fifteen years of age, whose right testis was small and undescended. He was also ruptured on that side. He had vomited. The case was regarded as one of strangulated omental hernia. On opening the tunica vaginalis, blood-clots escaped, and the swollen and livid testis was exposed. The cord was twisted three half-turns outwards. Mr. Barker removed the damaged organ, and the boy made an excellent recovery.

Dr. Fritz Cahen has reported a case (with a coloured illustration) of a young man twenty years of age who had an undescended testis of the right side. When admitted into hospital it was found to be swollen to the size of a pigeon's egg and was very tender. It was thought to be an incarcerated hernia, but on the seventh day, when it was operated on, the testicle was found to be a blackish red, and the cord was twisted in two rotations inwards. The testicle was free in its sac and "like a plum on its stalk." It was removed, and the patient went home cured after fourteen days.

Gervais has reported a "successful operation" in Mikulicz's Klinik for torsion of the spermatic cord in a boy of four years of age. The case, however, is so imperfectly recorded as to be practically valueless. The side affected is not noted.

Nicoladoni has described two cases. The first was that of a forester sixteen years of age, who was suddenly attacked with pain and swelling in the right testis and with vomiting. The right side of the scrotum was empty. On an incision being made bloody serum escaped, and a bluish-black and swollen testis was exposed. The cord was twisted outwards. The testis was removed. The second case was in a man aged sixty-two years; the symptoms were similar to those already many times described; the twisted cord, which had almost made a complete revolution was upon the right side. As gangrene seemed about to supervene, the testis was removed.

Bramann has described a strange swelling of the left testicle, which he considered to be of a like nature with Nicoladoni's cases. The swelling was, however, less tender and acute, and as in due course it subsided under cold-water bandages there was no operation to confirm his diagnosis.

As regards the side affected, it would appear to be quite a matter of chance. Of the fourteen cases here brought together the right side was involved in eight instances and the left in five. More important than this, however, is the fact that the twist is generally associated with imperfect descent of the testis and not seldom with a congenital hernia. I doubt whether a satisfactory explanation of the cause of the rotation of the testis will be forthcoming, though various theories may be advanced. The theory of misdirected energy of the gubernaculum is not altogether acceptable ; for, even if the gubernaculum has all the power ascribed to it, it is difficult to see how, being fixed at its lower end, it can swing the testis round and round ; and, as the rotation has sometimes occurred when the boy has been lying in bed, violent effort cannot always be the cause of the disaster. Boys about sixteen of age are, or should be, almost always at violent exercise, and it is at least suggestive that it is only the unhappy possessor of an undescended testicle that gets into this very peculiar kind of trouble. There is one thing quite certain—namely, that a testis in the scrotum which possesses a normal mesorchium cannot be twisted. A scrotal testis with a long mesorchium may, perchance, undergo rotation, but this accident is far more likely to affect an undescended testis which has no mesorchium in the proper sense of the term. The direction of the twist taken by the revolving testis is entirely a matter of chance ; it was sometimes inwards, sometimes outwards, and in some of the cases the direction is not recorded. Indeed, I see no imperative reason why it should be, though as a matter of interest the direction may well be noted. The condition of axial rotation of the testis is exactly like that of an ovary twisted on its pedicle, and I doubt whether the surgeon who is removing such an engorged ovary investigates the direction of the coil of the pedicle. In many instances of axial rotation of the testis it must be impossible for the surgeon to make the diagnosis before cutting down upon the swelling ; but when the rotation has taken place so near to the testis—as in my own case—that the external abdominal ring may be found to be empty, the cord unobscured, and the vas deferens of normal size ; when there is no history of a kick or blow, and no discolouration of the skin ; and, lastly, when there is a history of imperfect descent of the gland, when the epididymis is found in front of the testis, or when that half of the scrotum is empty — there need be no difficulty in making a correct

diagnosis. In every case, however, the surgeon must confirm or effect his diagnosis by exposing the swelling, unless, indeed, he succeeds in untwisting the cords as Mr. Nash so effectually did.

As regards treatment, the tunica vaginalis being opened, the tense, plum-coloured gland being exposed and the twist in the cord being detected, what should the surgeon do? The answer which I would give is, "Let him tie the cord high up and remove the swollen mass." And for these reasons: if, as is probably the case, the testis has never completed its descent, it is more than likely that it is of no physiological value; but, even if it be perfectly developed, the chances are that the terrible engorgement to which it has been suddenly subjected would entail its subsequent atrophy, even if the gland escaped actual suppuration or gangrene. Twisting the spermatic cord in the lower animals is the French method of producing atrophy of the testes and sterility, and surely no other result can be expected after a tight twist of the cord in the human subject.

Mr. Bryant is probably correct in his surmise that certain cases of atrophied testicle have been examples of axial rotation the nature of which had been originally overlooked. Seeing, therefore, that disappointment is almost inevitable in these cases if an attempt is made to save the gland after operating, that the risks of sloughing and septicæmia are not inconsiderable, and that, on the other hand, rapid recovery follows ablation of the darkened mass, there can be little advanced (except the sentimental reason) in favour of leaving the gland. The points to which it may be well that future observers should specially direct attention in cases of axial rotation appear to me to be these: (1) The relative position of the testis and epididymis; (2) the antecedent development and the extent of the descent of the testis; (3) the association of a congenital hernia or of an open funicular process; (4) the exact nature of the mesorchium and, in the event of the testis being replaced, the subsequent progress of the case and the ultimate condition of the testis.

In conclusion, I would like to acknowledge with gratitude the help which I have obtained in compiling this account from Jacobson's valuable work on the Diseases of the Male Organs of Generation and from references given in *The Lancet*. I venture to think, moreover, that I may take this opportunity of saying, on behalf of my *confrères* and myself, that the critical notes and references for which we are now accustomed to look as a preface to Surgical Reports in *The Lancet* are not only exceedingly well done but of great practical value.—*The Lancet, November* 18, 1893, *p.* 1247.

AFFECTIONS OF THE SKIN, &c.

66.—ON ALOPECIA AREATA.

By Phineas S. Abraham, M.D., Physician to the Western Skin Hospital, London.

The diagnosis of alopecia areata is a matter of no difficulty in the majority of cases; but it is not invariably easy to isolate it clinically and pathologically from certain other affections of the hairy parts. More than one distinct disease, in fact, may have alopecia areata as a prominent feature or symptom. The literature of the affection from the time of Willan and Bateman onwards is instructive from more than one point of view. As with many other diseases, we find that great authorities from time to time publish some observation, or supposed observation, and, proceeding from the particular to the universal, forthwith enunciate a general theory, under which, of course, all cases must be made to fall. Although certain cases, as shown by M. Brocq, are the result of a folliculitis or perifolliculitis, no prior pustulation is met with in the vast majority of them, as was formerly believed. Again, the general belief in the specific fungus "microsporon Audouini" as the cause of alopecia areata lasted for years, in consequence, no doubt, of the common tendency of our profession to accept without personal investigation or corroboration all that our great men may say. There are still persons who believe that all cases of alopecia areata are of parasitic origin, and others who hold that all cases are neuropathic; but accurate observers in all parts of the world are more and more admitting that, while some are undoubtedly neurotic, many cases can only be explained on a parasitic hypothesis. Since Mr. Hutchinson and Dr. Radcliffe Crocker published their novel view that the majority of the cases of alopecia are etiologically related to common ringworm of the scalp I have as far as possible investigated the histories of 137 cases of alopecia areata, and have examined microscopically a considerable number. In no case which did not show other evidence of the affection being really tinea tonsurans could a trichophyton be found, and for some time it appeared to me that in comparatively few instances could a history of previous ringworm be obtained. The evidence as to this latter point seems, however, to be increasing, and the statistics now presented undoubtedly lend some support to Mr. Hutchinson's and Dr. Crocker's theory. It is apparent, indeed, that in no less than forty-four instances, or 32 per cent. of the cases, there had either been a previous history of ringworm in the patient or other

members of the family, or persons more or less in contact with the patient had been at some time or other affected with that disease. There are certainly cases, on the other hand, in which no connection with ringworm can be traced, and I can relate one, at least, in which I know and can vouch for all the facts. The question of the possible contagiousness of alopecia areata is also illustrated by my figures. In twenty-seven of the 137 cases there is a clear history of other members of the family or intimate friends having been affected with alopecia; but some of them are of very doubtful value in proving contagion, for the individuals have been affected at very different periods of time —years sometimes intervening—or after they had been long living apart. Instances are referred to of the occasional occurrence of epidemics of alopecia areata, as noted by Bateman, the French writers, by Hillier, and others. Quite recently a somewhat analogous series of cases which occurred in an orphanage came under my notice, which, in accordance with our preconceived notions, may be taken either to show that at times alopecia areata is a very contagious disease or that that affection and common ringworm of the scalp are practically due to the same cause. Four boys were brought to me at the Western Skin Hospital with bare patches on the scalp. The patches were quite smooth and white, with a few short hairs with atrophic roots around the margin and some loose atrophic hairs outside; no fungus could be found. The history was as follows. A boy fourteen years of age had ringworm four years ago and was said to have been cured. Bald patches commenced to appear about a year since. He shortly afterwards entered the orphanage and was passed as having no contagious disease. Since his admission eighteen of the boys of a total of twenty-two in the establishment had developed similar bald patches, and in most of them the hair had grown again under the influence of stimulating applications. During the spring of this year two other boys in the house showed signs of common ringworm; and within the last few weeks another boy had undoubted tinea tonsurans. Three weeks ago the matron informed me that she, too, "had caught the disease"; and I found on her head three small round patches of commencing alopecia, without broken or clavate hairs, but with many loose hairs around with atrophied roots. In this case, too, no trichophyton could be demonstrated. She remembered that on one occasion she was interrupted before washing her hands after attending to the boys' heads, and she thinks that she then touched her head. There was slight itching before the hair began to fall. For a long time I have observed that certain persons suffering from alopecia areata had been the subjects of extensive seborrhœa, and I agree with M. Brocq in thinking that some cases may be the sequel to that affection. The case

of a woman with multiple patches was a marked instance; I found that several other members of her family had extensive seborrhœa. Comparatively few (only thirteen) of the 137 cases gave a history of neuralgia or previous neuroses, and in those who complained of severe headaches I have just as frequently found the short clavate hairs as in the others. I am aware that this is not in accordance with the views generally expressed. One of my cases illustrates this point. This patient is the mother of nine children, and none of them have ever had ringworm or alopecia; nor does she know of anything of the kind among friends. One of her patches is very depressed and scarlike, and shows club-shaped hairs at the borders; a smaller patch shows evident folliculitis. She had been out of health for some years, and suffered much from severe headaches; there was also extensive seborrhœa.

With reference to treatment, parasiticidal ointments and the cautious occasional application of Burt's fluid are, I believe, serviceable in a majority of the cases. I have by these means seen alopecias cured which had lasted for years and were apparently hopeless. I frequently use a carbolic and salicylic acid ointment, and sometimes intermit with lotions like the "lotion excitante" of the St. Louis Hospital. I always treat the seborrhœa if present. When I want to impregnate an area of scalp with a germicidal fluid I am now trying an apparatus made for me some months ago by Messrs. Maw, Son, and Thompson, which is constructed on the principle employed in creasoting logs of wood or railway sleepers. A partial vacuum is first produced over the diseased part, which has been previously epilated, shaved and washed with soft-soap, alcohol, and ether; the germicide is then let in under the influence of the atmospheric pressure. It is curious to observe how the spots implicated come into view by a manifest localised hyperæmia of the subjacent cutis, a fact of some pathological significance. I have only been able to use this method in a few cases, and I can say but very little at present as to results.—*The Lancet*, *November* 25, 1893, *p.* 1306.

67.—REMARKS UPON THE USE OF THYROID EXTRACT IN THE TREATMENT OF PSORIASIS.

By Byrom Bramwell, M.D., F.R.C.P.Ed., Assistant Physician to the Edinburgh Royal Infirmary.

[The following remarks are abstracted from "A Clinical Lecture on a Case of Psoriasis Treated by Thyroid Extract:]

I was induced, as I stated in my previous paper in the *British Medical Journal* of October 28, 1893, to try the thyroid treat-

ment in psoriasis because I had noticed that in some cases of myxœdema a very marked desquamation of the skin occurs during the process of cure. In the first case of myxœdema which I treated by thyroid feeding the skin peeled off from the hands and feet, just as it does after a severe attack of scarlet fever. Desquamation has occurred in every case of myxœdema and sporadic cretinism, in which I have had the opportunity of carefully observing the effects of the thyroid treatment. It has never been so profuse as it was in my first case; in fact, in most of the subsequent cases it has had to be looked for; but it has always been quite noticeable, when looked for, on the heels.

The remedy is of undoubted value not only in psoriasis but also in lupus and ichthyosis, possibly also in exfoliative dermatitis, and perhaps in other varieties of skin disease as well. Fortunately the first case of psoriasis in which I employed the remedy improved straight away in a most remarkable way. I say this was fortunate, for some cases of psoriasis do not seem to be beneficially affected by the remedy, and, had I chanced to begin with one of them, I might perhaps have hesitated to continue the trial. My first case of psoriasis was exhibited at a meeting of the Medico-Chirurgical Society of Edinburgh, which was held on February 16, 1893, for the purpose of discussing the subject of myxœdema.

The three cases in which the result has been so successful have been treated in hospital. I am disposed to think that confining the patients to bed or to a hospital ward—that is to say, to an equable temperature—is perhaps, an important adjunct to the treatment. Some slight cases of psoriasis which I have treated as out-patients have not improved, or have for a time improved and again relapsed. It is possible, I think, that one reason why out-patients do not improve is that they go about and expose themselves to changes in temperature and weather, and that that, perhaps, to some extent interferes with the therapeutic effects of the remedy. But that is certainly not the only explanation of the failures; for in three cases which I have treated in hospital the remedy did not effect a cure. One of these, the third case reported in the *British Medical Journal* of October 28, 1893, improved remarkably for a time, and then relapsed. Another, a comparatively slight case, did not seem to derive any material benefit from the treatment.

I do not say that thyroid extract is a specific in all cases of psoriasis, but I do deliberately say that it is a most efficacious remedy in some cases of the disease. A man who claims to obtain therapeutic results, which the subsequent experience of independent observers fail to confirm, necessarily and deservedly loses credit and comes to be looked upon as an untrustworthy observer. I have no wish to place myself in that position. My

experience enables me to say definitely that some cases of psoriasis can be cured by thyroid extract, and by thyroid extract given alone. In all of the cases in which I have employed the remedy, absolutely nothing has been applied to the skin. All the cases which I have published have been treated in a public hospital, and closely watched by many independent observers. In the first two cases no change was made in the dietary. It is probable, I think, that that change may in some degree have helped the treatment, but for the reasons I have already given I believe the successful result must be chiefly attributed to the thyroid treatment.

I repeat that, as the result of my own observation, I am disposed to think that in some cases of psoriasis the thyroid extract exerts such a rapid and beneficial effect, that, for them, it may without any exaggeration be termed a specific, but that in other cases the effect is comparatively slight, and that in some cases the remedy seems to be useless. But whether the last conclusion is correct or not, I unhesitatingly affirm that thyroid extract is a most valuable addition to our means of treating psoriasis. I fancy that the quickest way of curing most cases of psoriasis would be:—To confine the patients to an equable temperature, either in their own homes or in the wards of a hospital; to give them a milk, fish, chicken diet (that is, a diet from which sweets and red meats are excluded); to regulate carefully the condition of the bowels ; to apply locally some of the external remedies which experience has shown to be useful in the treatment of the disease; and to administer internally the thyroid extract or, preferably, thyroid tabloids, in as full doses as the peculiarities of each case will allow. The last part of the treatment is, perhaps, the most important.

I have come to the conclusion that the best method of giving the remedy in cases of skin disease is to give as large doses as each individual patient can bear. Some patients can take much larger doses than others. The problem is to determine, in each individual case, the maximum dose of thyroid extract (in the form of liquid or, preferably, I think, in the form of tabloids) that the patient can take without being upset. The best therapeutic guide to the dose which each patient can take is, I think, the condition of the pulse. In cases of myxœdema and sporadic cretinism thyroid extract raises the temperature and pulse, and, when given in large doses, is apt to produce profound depression, headache, aching pains in various parts of the body, nausea, vomiting, gastro-intestinal disturbance, and diarrhœa. In healthy persons, and in patients who are suffering from psoriasis and many other skin diseases (lupus, ichthyosis, &c.), larger doses can usually be given (than in myxœdema) without producing any bad effects. Many patients who are suffering

from skin diseases can take a quarter of a gland daily for long periods of time. A larger dose than this usually raises the pulse above 100 or 110, and is apt to produce headache, nausea, gastro-intestinal disturbance, &c.

Having found by experiment, as it were, the maximum dose which each individual patient can take, the remedy should be persistently given for long periods of time. In cases of psoriasis and other forms of skin disease, it is premature, I think, to conclude that the treatment is a failure, unless the maximum dose which the patient can take has been given for at least a couple of months ; and in some skin diseases—lupus, for example—a much longer period than this may be required to produce any very decided effect in the way of cure. In one of the cases of lupus which we have in the wards, the patient has been almost continuously under the the thyroid treatment, either in or out of hospital, for twelve months.

In some cases of psoriasis there is no improvement until distinct symptoms of thyroidism are produced ; a rapid and continuous improvement then results.—*British Medical Journal*, *March* 24, 1894, *p.* 618.

68.—ON THE TREATMENT OF ACNE.

By George D. Holsten, M.D., Brooklyn.

As the comedones are the first exciting cause of the inflammation in the gland, they should be removed as soon as possible. For this purpose their mechanical expression by means of a comedo-extractor will be found of advantage. For the excessive formation of horny epidermis over and around the mouth of the follicle, mechanical or chemic means are necessary. Of the former, scraping with a curet, frictions with some coarse substance, such as finely powdered marble-dust, corn-meal, or pumice-stone, will effect the necessary change. As these means are not always agreeable to patients in private practice it may be better to try the chemic agents, such as salicylic or acetic acid, or the alkalies, such as potash-soap, spirit of green soap, liquor potassii, made up into ointments or pastes or lotions ; or reducing agents, such as resorcin, sulphur, or the mercurial salts.

For the inflammatory reaction likely to be excited by the curetting or the energetic action of chemic agents, zinc oxide, carbonate of magnesia, corn-starch, ichthyol, will be found useful. As antiseptics, corrosive sublimate, boric acid, resorcin, and sulphur are among the best, and to restrain the excessive glandular activity and stimulate the skin to healthy action nothing is superior to sulphur.

To understand better the use of these various remedies in the different stages of acne let us suppose a case of indurated acne with large, red, painful tubercles and pustules, and consider its treatment. Having given all necessary attention and direction as regards the system generally and corrected all derangements, we will, if the patient permits, with a dermal curet scrape off the tops of the pustules and express their contents; with a dermal lancet or a small scalped incise the tubercles and let out the pus found in them, and with the comedone-extractor press out comedones.

Bleeding should be encouraged for a short time by compresses dipped in a warm saturated solution of boric acid, the bleeding lessening the congestion and the boric acid at the same time acting as an antiseptic. Then to soothe the inflamed painful face zinc oxide and magnesium carbonate, with or without ichthyol, in lotion or in Bassorin paste, may be applied several times daily. After the reactionary inflammation has subsided a lotion containing mercuric chloride is applied during the day and a resorcin-paste at night. The bichloride acts as an antiseptic to prevent the formation of new pustules and also stimulates the glands to more healthy action, while the resorcin acts in very much the same way as does sulphur. If the horny epidermis is abundant, salicylic acid may be added to the paste. All of the pustules, tubercles, and comedones cannot, of course, be treated at the first consultation; therefore this mechanical treatment will have to be repeated until the face is in a fairly good condition.

The face should be washed daily with warm water and soap, and if the skin be thick, a potash-soap will be useful, while upon thin, sensitive, inflamed skins an ichthyol-soap will be of service. In either case the lather should be permitted to remain on the face for several minutes—from five to fifteen—rinsed off with cool water, the face dried, and whatever remedy is employed, then applied.

When the acute stage of pustulation has subsided, stimulating remedies will come into service, and of these sulphur in some form is the best. The sulphur may be employed as an ointment; in the "lotio alba," made by mixing together solutions of sulphuretted potassium and zinc sulphate, to which some sulphur is then added, or it may be suspended in Bassorin paste, which has the advantage over ointments of drying in a short time, making a smooth, even dressing on the skin, keeping the remedy in close contact for a length of time, and of being easily removed with warm water.

In this way the disease will soon be brought under control. Then should come a period of after-treatment, the object of which is the prevention of relapses. Here the most service will

be secured from the long-continued use of a feeble resorcin, or resorcin-sulphur, or resorcin-sublimate lotion.

Internally arsenic has long been held in great esteem. It will not be of service used alone, or during the acutely inflamed stage, but at later periods or when a condition of parakeratosis, exists, then, in conjunction with external remedies, it will do good.

Ergot has also been extolled, but my results with it have been disappointing, except that it is useful at times to lessen the vascularity of the face ; but it has seemed to me that this could be better obtained by the use of local sedative and antiseptic remedies in a much shorter time.

When patients will not permit such surgical measures as I have mentioned, a slower course of treatment will have to be adopted. Antiseptic applications must be employed until suppuration ceases, combined with remedies to reduce excessive horny formation and to alter the action of the sebaceous glands.

The frequent and intimate association of seborrheal eczema with acne should direct attention to this condition, and especially after the acne has been cured should treatment be continued against the still existing dandruff. The remedies that will prove of most service will be resorcin, sulphur, boric acid, salicylic acid, chrysarobin—in fact all of those belonging to the class of reducing agents.—*Medical News, November* 18, 1893, *p.* 569.

AFFECTIONS OF THE EYE AND EAR.

69.—ON SCHOOL OPHTHALMIA.

By Jonathan Hutchinson, F.R.S.

In years past I have on several occasions had to report on epidemics of this form of ophthalmia in workhouse schools, but not until quite recently have I heard of it in middle class schools. During the last few months its existence in five well managed schools in distant parts of the country has come to my knowledge. The type of the disease seems to be mild, and the first stage, that of congestion, is specially liable to be overlooked on account of its very slightly marked character. A number of cases indeed have escaped recognition until the lids were distinctly granular, and even the patient himself could not recall more than a day or two of irritability. At one school which I visited at least 50 per cent. of the boys and some of the teachers had suffered. The type was very similar in all the cases. There has been a few days' irritability and redness of the

eyes, which passed off almost without treatment to be followed by a definite but mild condition of granular lids. Most of the eyes which I inspected showed only the papillary conditions but a few had small sago grains. None of them showed advanced or severe conditions, but many had resisted more or less prolonged treatment. Several boys having returned after the vacation uncured, the disease rapidly spread. No fault could be found with the sanitary condition of the school. I was informed that in several instances the disease had spread to other members of the family to which boys suffering from the disease had returned. These I cannot vouch for, but I know of other cases in which no contagion occurred, but these were cases in which the treatment was being carried out and due precautions observed as to towels, &c. In this particular school 5 per cent. of the boys were recognised to be suffering from the disease in September, 1893, rising to 40 per cent. in October, and to not less than 50 per cent. in December, in spite of boracic acid lotions and strict lavatory precautions, in fact every precaution with the exception of isolation. In no case, however, had the upper lid been everted for treatment. Many families in the town suffered, but they were chiefly those which had been visited by children from the school.

The disease is the same in the rich as in the poor, as is proved by the fact that the terms used in a report written by me in 1866 in repect of a workhouse school might very well serve in respect of this particular high class school. The chief difference was that in the workhouse the disease had been unrecognised for six years, while in the school it had been recognised within six months. At Brentwood (a school of 310 children) I found about a third suffering from ophthalmia of a chronic catarrhal form. In only a few had it passed into a badly granular form, and I did not consider that any of the lads presented the true trachoma bodies. The chief difference in the high school cases was that a granular condition of the lids was more easily assumed, and with much less of preceding conjunctivitis. This, however, may be merely due to a difference in my powers of observation, and to my recognising as slightly granular, conditions which I should formerly have classed as healthy. This leads me to remark that the diagnosis of slightly granular lids is by no means easy. After all, the papillæ which, when enlarged, constitute the "sandy lid" are normal structures, and large allowance must be made for varying conditions within the limits of health. In the doubtful cases no amount of experience will enable anyone to say with certainty, that such granulation is morbid. The only safe plan during the prevalence of an epidemic is to treat all suspicious cases as if real. If there is a difficulty in diagnosis before, it is infinitely greater after treatment.

The disease to which we used to apply the term catarrhal ophthalmia (at Moorfields) was an acute conjuctivitis attended by great congestion and mucous secretion. The ocular conjunctiva was always affected, and the congestion had the peculiarity of being in patches, the vessels being so closely placed as to simulate ecchymoses. Both eyes were affected, and with almost equal severity. There was never any pain or intolerance of light. It seemed invariably to occur in groups, several members of the family suffering at the same time, but on the other hand it did not spread in epidemic form nor were more than a few families affected at a time. This may possibly be explained by the fact that the disease is of brief duration, and, while it lasts, is so conspicuous as to keep the patient at home and warn others off. The attacks lasted usually from a week to ten days, and though recovery was hastened by astringents it seemed capable of spontaneous cure. It is not liable to recur, and, as a rule, leaves no sequelæ. In short, it is a malady which, although really trivial, look alarming. The particular form of ophthalmia under discussion is quite distinct from the suffused eye associated with coryza. Moreover, it spread in families by contagion and without any other symptom of "cold." The name which would most definitely attract attention to its leading feature would be "Family Ophthalmia."

This form of conjunctivitis does not lead to granular lids, though it may conceivably do so in persons predisposed thereto by race or state of health. I cannot reject a suspicion, however, that these cases of so-called catarrhal ophthalmia are only very exaggerated forms of that which is the parent of granular lids. Against this supposition is the fact that in considerable epidemics not a single patient has ever exhibited any condition approaching it. There are a number of reasons for believing that the contagion does not travel through the air, nor do I think that defective ventilation and the like have any appreciable influence in spreading the disease, except so far as they favour direct infection. The possibilities of actual contact in schools are too great for it ever to be practicable to exclude them, and there is absolutely no evidence that the disease can prevail as an epidemic in a town or community amongst individuals who are not brought into personal communication with each other.

Good reasons can be alleged for believing that the cause of granular lids is a special, or if I may venture to call it so, a specific, affection. Sporadic cases of granular lids are rare, and they almost invariably occur in epidemics or in those who have suffered in school. The few isolated cases I have seen have been in persons of Celtic or Hebrew descent.

One of the most difficult problems connected with the subject is to determine when and under what conditions the victims of granular lid ophthalmia may mix with others and abandon systematic treatment. In the English race the disease but rarely becomes a source of danger to sight, and the medical officers of our workhouse schools have not as yet taken any special cognisance of the great risk involved. Not only have children suffering from ophthalmia been admitted into the schools, but those only half cured have been allowed to leave without remonstrance. It may be difficult to prevent this, but some attempt should be made. Hospital schools should be provided into which chronic cases can be received, and where they can remain until they get well. At a certain large public school every year brings forty or fifty cases of ophthalmia in spite of isolation and proper treatment. This is probably the result of contagion from boys incompletely cured being prematurely permitted to re-enter the classes.

Rumours have reached me of the existence of ophthalmia at a number of middle class schools throughout the country, and I cannot help suspecting that a skilled inspector of the middle class schools might reveal a far wider prevalence of the malady than we at present recognise. In some instances I suspect that the school authorities have concealed its existence, and in others have simply neglected it.

The first report on ophthalmia in workhouse schools was by the late Sir William Bowman in 1858, followed by another by Mr. Haynes Walton in 1861. My own report was in 1866. Although, with others, I thought the ophthalmia one that could easily be cured, I am proud of the fact that I then asserted that contagion and contagion only was its cause, and recommended then, as I do now, isolation as the only means of preventing its spread. None of the measures adopted have proved sufficient, and our workhouse schools still suffer to a most lamentable extent from ophthalmia, and the state of things calls loudly for further effort.

With regard to preventive measures all cases of inflamed eyes occurring in schools should be promptly isolated and all large schools should be provided with apartments ready for the emergency. In the majority of cases doubtless a cure might be quickly effected, but a careful examination of the lids should be made before the pupil is allowed to associate with others, and should be repeated a few weeks later whether there are any symptoms or not.

Any suspicion of granular lids should lead to immediate isolation and to special attention being paid to local and constitutional treatment. It is probable that the liability to lapse into a chronic state, to pass from the papillary into the sago-

grain state, depends very much upon the vigour of the patient and in such a state tonics and fresh air become of great importance. The place of residence should be dry and bracing.

In the event of an epidemic in a school, ought the establishment for a time to be broken up and the pupils sent home? Certainly not. The disease has nothing to do with the location of the school or with the buildings. It is due to contagion only. If parents insist upon having their children home it must be on their own responsibility, and with a full knowledge of the risk of the disease spreading in their own families. Apart from the danger which such a course entails of spreading the disease broadcast, by retaining the children at the school under one surgeon we make more sure of their having skilled treatment efficiently carried out.

When the disease has not progressed beyond the papillary stage isolation for a month or two will probably suffice, but if true trachoma bodies are present then the period of isolation may extend to months or even years. If the condition has become chronic and resists treatment the child ought probably to be regarded as unfit ever to mix with healthy children. Such children should be sent to invalid schools at the sea-side or in other bracing situations. It is worth while adopting any measures, however expensive or troublesome, in order to ensure their cure.—*Medical Press and Circular*, *January* 31, 1894, *p.* 106.

70.—ON PULSATING EXOPHTHALMOS.

By George Edward Walker, F.R.C.S., Eng.;
With an Account of an Operation by Chauncey Puzey, M.R.C.S.

[Mr. Walker's references to similar cases published by Mr. Puzey (*The Lancet*, February 14th, 1891), Mr. Rivington (Trans. Royal Med. and Chirurg. Soc., 1875), and Dr. Dempsey (*Brit. Med. Journal*, September 18th, 1886) are here omitted.]

The patient whose case I record was sent to me by Mr. Oldershaw, of Walton, on September 18th, 1893, with the following history:—She is aged 42 years, and is of stout build and muscular; her complexion is dark and of a somewhat dusky, venous tinge. She has had nine children, of whom the youngest is 5 years old. She has always had good health. On Saturday, August 19th, about 10.40 p.m., being in a strange house, she in going from one room to another—they being, as she thought, on the same level—fell into a deep cellar, access to which was by a step-ladder. She was found lying against the steps, head downwards and unconscious. She was carried up into the open

air, and on her becoming conscious some vinegar-and-water was given her. This caused vomiting. She was then able, with assistance, to walk home, a distance of about three-quarters of a mile. The only apparent injury was a scalp-wound, one inch and a half long, on the left side of the occipital protuberance. On the 21st she complained that her right eye was tender, and that she was troubled by a noise in the neighbourhood of the right ear. On the 23rd she noticed that the eye looked larger than the left one, and that the lids were somewhat swollen. Mr. Oldershaw saw her for the first time on the 24th, and found matters as above described, the sight being as yet quite good. He gave a lotion for the scalp wound, and an aperient mixture. On the 26th the murmur had increased, and there was some œdema of the conjunctiva, and on the 28th there was further advance of these symptoms, the lids also being more swollen. On the 30th there was distinct protrusion of the eye. On September 1st she could not raise the upper lid, but the sight was still good, and on the 3rd when Mr. Oldershaw was temporarily absent, no noticeable change had taken place. The treatment was by iodide and bromide of potassium, antifebrin, leeches, and a blister to the temple. On the 17th, however, when Mr. Oldershaw returned, he found all the symptoms greatly changed for the worse, the sight being reduced to perception of light, and there being so much pain in the head as to render her almost sleepless. He had repeatedly urged her to see me, but she could not make up her mind to do so before Monday, September 18th. When I saw her the diagnosis was simple enough. The fall; the scar on the left side of the occiput; the gradual venous congestion and the protrusion of the eye—now very great; the pulsation of the globe and of the orbital veins; and the characteristic murmur heard all over the head, but especially in the right temporal region, all pointed to post-ocular aneurism, either intraorbital or intracranial. The disease was so advanced that the level of the lids was much beyond that of the nose; the lids were swollen and their veins were much enlarged; between them there protruded a thick pad of chemosed conjunctiva, and on opening them the whole globe was seen to be intensely engorged, the episcleral veins especially standing out, large, dark, and tortuous. The cornea was clear, but there was no perception of light. Several times during the progress of the case we imagined that there was such perception, but I think that we were mistaken. At all events there is none now. The eye was quite fixed and the upper lid could not be raised by the levator muscle. Pressure on the right common carotid artery stopped the murmur both to the patient and to the observer. As I had no doubt of the case being aneurismal, and taking it to be an aneurism of the

carotid artery in the cavernous sinus, I believed the proper course to adopt was to tie the common carotid artery and sought the aid of my colleague, Mr. Puzey, for that purpose. He saw the case with me on Tuesday, and, agreeing as to the diagnosis and treatment, he at my request tied the artery on the next day.

Report by Mr. Puzey.—"The patient was very stout, weighing about 16 st., which rendered the mapping out of the line of incision more difficult than usual, and she did not look a good subject for an anæsthetic. The A.C.E. mixture was at first tried, but the patient's countenance soon showed by its dusky hue that ether could not be borne. Chloroform was then very cautiously administered and was taken well. The operation was performed in the usual manner, except that the thickness of the woman's neck, and the depth at which the vessels lay, necessitated an extra long incision, and numerous distended veins were tied and divided between two ligatures. The common carotid artery, which appeared to be rather too large and too yellow, was tied with thick (No. 4) chromicised catgut ligature, and all pulsation and bruit in and around the orbital swelling ceased at once. The whole of the wound was then thoroughly dusted over with powdered iodoform and boracic acid and closed with fine silver sutures, except at the lower end, in which a small-calibre drainage-tube was laid, not reaching as deep as the artery, but deep enough to prevent any collection beneath the deep fasciæ. A small quantity of gauze soaked in glycerine of carbolic acid, and a thick roll of salicylic wool, fixed securely with muslin bandages, completed the dressing. It need hardly be stated that during the twenty-four hours which had elapsed between the consultation and the operation full measures for the purifying and antisepticising of the patient's skin had been taken. On her recovery from the anæsthetic she expressed her pleasure at being free from the distressing pain and noise which had so long tormented her, and at the general relief to her head which the operation had afforded. The progress of the case was uneventful; the highest temperature recorded was 99·4° F. and was generally normal or subnormal. The dressing was changed forty-eight hours after the operation (September 22nd); there had been a moderate amount of sanious discharge, and the drainage-tube was shortened. Two days later (September 24th) the dressings were again changed and the drainage-tube was removed. There was never any suppuration, and the wound was firmly united at the end of the first week in October."

Cases like this are rare, and when the first case came to me at St. Paul's Hospital on June 6th, 1878, I had neither seen nor heard of one. Accordingly, when a woman aged 33, with

symptoms as regards protrusion, engorgement, and murmur almost identical with those described in the foregoing case—I did not notice pulsation, but I have no doubt that it was present—presented herself at St. Paul's Hospital I was much puzzled, and dwelt on the case a good deal, asking many questions and, I fear, alarming her thereby. Wishing to examine her at leisure, I told her to wait until I had finished my other work; but when I had done so she had disappeared. She afterwards said she was frightened, because she was informed that I should remove her eye. However, I had obtained this history, that on May 6th she was struck on the left ear by a man's left fist, and on the 20th her eyelids were swollen, and on June 6th the globe was thrust out and the lower lid was everted. She did not return till July 19th, when I found the eye lying on the cheek, the cornea opaque, through the lids being unable to cover it. She stated that since her last visit she had been an inmate of a general hospital and had had many consultations held over her. As the upshot of these threatened her with a fate even worse than the removal of the eye, she ran away and came back to me. She had been ordered to be photographed. No wonder that she resented this, for by this time her appearance was hideous indeed. Although I had not expected to see her again, I had thought much over the case and had come to the conclusion that there was an aneurism of the carotid artery just as it emerges from the petrous bone, and following the usual method in the treatment of aneurism in other parts of the body, I tied the common carotid artery on the 23rd. The distress and noise in the head stopped at once, but the other symptoms yielded very slowly; the sight, however, which was reduced to a mere perception when the vessel was tied, was in three weeks $\frac{14}{30}$, and afterwards became normal. She was shown here on November 7th, 1878, 107 days after the operation, with the eye still protruded aud the veins engorged, and even five years afterwards there was still a trace of both these conditions. The recovery of sight after so severe and so long continuing disease was marvellous.

The next case came under my care on August 2nd, 1886, being that of a boy aged 15. The symptoms were much less marked than in the last case and might have passed for those of a catarrh, especially as at first he denied having had a blow or a fall. There was no protrusion of the globe at this time. But soon afterwards his parents informed me that in the preceding February he had fallen down twelve stone steps his forehead striking the floor or a step with such force as to cut the skin to the bone and to cause insensibility for three days. On awaking he had complained of a swishing noise in his right ear, which had never ceased. A few days after I obtained this history the

left eye became similarly congested, but to a less degree. This soon disappeared, however, and at the same time protrusion of the right eye took place, and rendered the diagnosis of post-ocular aneurism complete—at least in my opinion. I therefore proposed ligature of the carotid artery, but as the parents objected, I tried pressure by means of a weight on the vessel in the neck, but he soon tired of this, and as I had little faith in his ability to stand pressure long enough to cure the disease I again urged ligature, but the parents, fearing the operation, refused their assent and took the boy to London, where he was seen by several surgeons, who, to my intense surprise, forbade the operation, on the ground that the disease was not aneurism, but a rupture of the carotid artery into the cavernous sinus, and therefore unlikely to be cured by ligature. So he was let alone, the protrusion increasing but slowly, if at all latterly, until January 20th, 1887, eleven months after the injury, when, going to a theatre, he got into a crush, and was much alarmed and almost fainted. On going home he could not eat, passed a restless night, and was sick and purged; his parents noticed on the next day that his eye was more protruded and engorged than ever. He was dimly aware that a change had taken place in his head, but he did not discover until midnight of the 22nd that the murmur had stopped. I saw him on the 23rd and confirmed these statements as to the greater proptosis and the cessation of the pulsation. Elsewhere ("Transactions of the Ophthalmological Society, 1887") I have given the case in full and entered into an elaborate argument that the method of cure, most likely by the displacement of a piece of clot which was enabled to act as a valve, allowing the admission of blood into the sac, but preventing its emission, proved conclusively that the disease was aneurism and not mere varix, and that the proposal to tie the carotid artery was justifiable. One of the surgeons who forbade ligature acknowledged, after the disease was cured, that there might have been a small aneurism in the first instance, but that it has burst into the sinus. If so, the propriety of ligature was unquestionable. I have given reasons for rejecting this theory, but the admission is enough for my argument—namely, that the artery should have been tied.

There is no doubt that the conditions in these cases varied greatly. In my first case, aged 33, though the eye was thrust from between the lids, though the lymph channels were so obstructed as to render the circumvascular spaces visible, and though the cornea at the time of operation, seventy-eight days after the injury, was quite opaque, yet sight was completely restored. In my second case, aged 15, sight appeared to be almost unaffected, though the disease had lasted between eleven and twelve months. In Mr. Puzey's case, aged 37, sight was

lost some time between five and fourteen months after the injury, and in the present case, aged 42, there was no perception of light when I first saw her, forty days after the injury, though Mr. Oldershaw notes that she had it faintly the day before. As to the production of blindness, I believe it to be due in most cases to lateral pressure on the nerve and not to longitudinal stretching. In my first case, where the nerve was stretched, one would think almost to breaking, seeing that the eye lay on the cheek, perfect sight was restored. In the present case I think that lateral pressure must be the cause, as, although the media are not quite clear, the eye being glaucomatous, the disc can be made out as a round, white patch, with a faint red streak up and down it. About a month after ligature I could see some of the vessels resembling red hairs.

Of treatment other than by ligature of the carotid artery I gather these facts from Mr. Rivington's paper. Local compression—that is, pressure on the eye itself—in ten cases cured none. Instrumental compression (of the common carotid artery) was employed in 4 cases: 1 died, and 3 received no benefit. Digital compression was resorted to in 16 cases: 3 were cured. Galvano-puncture was employed in 2 cases: 1 died, the other received no benefit. Injection of ergotine was performed in one case, making the disease worse. Injection of coagulating fluids was carried out in 4 cases: 2 were cured by perchloride of iron, 1 was made worse, and 1 was cured by lactate of iron after ligature had failed. When we come to ligature of the carotid artery a very different tale is told. 46 cases are mentioned, but as one was malignant it must be excluded. Two died, aged 65 and 63. Of 18 idiopathic cases 15 recovered and 3 obtained partial benefit. Of 26 traumatic cases 23 recovered and 3 died. In two cases both carotids were tied. Another fatal case has been mentioned above. To these Liverpool can add four, all of which were cured. Another case would have been cured had not ligature been forbidden. Three of these I have treated of in this paper, and a fourth, under the care of Mr. Richard Williams and Mr. Robert Jones, has been already published. The opinion that these cases should be let alone or temporised with, which is so fashionable in London, is based on the idea that they are not aneurism but varix. Now I do not deny that if an aneurism is left alone an opening is likely to be made into the cavernous sinus, as this is in the line of least resistance. An aneurism let alone long enough will always burst. Of course, in young subjects, as in the boy aged fifteen, the resilience of the tissues is such that it takes a long time to produce rupture of the sac. But those who object to ligature are scarcely logical. If the disease is not aneurism, but varix, why do they employ those remedial agents, such as digital pressure, iodide of potassium

hellebore, &c., which are supposed to influence aneurism, but not, as far as I am aware, varix, whilst they discountenance the only treatment which, with any approach to certainty, cures aneurism—namely, ligature? I believe that the very rare cases in which digital pressure has appeared to succeed in curing this disease have been cured accidentally—very likely by displacement of clot in the excitement consequent on the torture necessarily involved in the carrying out of the treatment, and not by the direct action of the pressure. In order to cure directly by pressure one must block the artery for the many hours required to produce a sufficient collateral circulation and at the same time give such an amount of rest to the aneurism as will allow the clot to coagulate sufficiently firmly to prevent it being disturbed when the full force of the heart is brought to bear on it. Were I asked to pick out a typical example, displaying at once the beneficial effect of ligature and the inutility of other treatment, I should choose the very one on which, as far as I know, the temporisers rest their case—viz., Mr. Rivington's. For in this case, surely, it is indisputable, firstly, that there was a communication between the artery and the sinus, seeing that red blood poured out of the orbital vein when it was punctured, and therefore, according to the opponents of ligature, it was an unsuitable case for ligature. It is, secondly, equally indisputable that every conceivable treatment other than ligature was tried without doing any good, and that when ligature was at last resorted to the disease was cured at once. That the perchloride of iron did anything but harm surely no one will maintain in the light of all the other cases cured by ligature.

For the diagnosis between intra-cranial aneurism and varix there is suggested what I believe is called Nélaton's sign. Nélaton is said to have laid it down as an axiom that if the murmur is continuous the disease is varix, and if interrupted it is aneurism. One would wonder how many cases he had verified post-mortem before he ventured on such an assertion. Failing such evidence, I believe that the distinction is worthless. Whether a murmur is continuous or not depends, I think, almost altogether on the acuteness of the listener's ear. Of the many surgeons who listened to the boy's head at the meeting of the Ophthalmological Society, about half of their number said that it was continuous, and the other half that it was interrupted. But, surely, all such murmurs are continuous; if the heart is not in systole the contraction of the large arteries keeps up the murmur, though, of course, less audibly. The murmur heard in the first patient mentioned was continuous; she had almost always a full, vigorous pulse.

To sum up, I venture with some confidence to submit that, except when brought about by direct violence—such as a stab

by a pointed weapon or a splinter of bone—these cases, in youth and middle age at any rate, begin as aneurism : arteries, like teacups, are oftener cracked than broken, and can be cured by being treated as aneurisms, whether they have burst into the cavernous sinus or not ; and surely, in these days of aseptic surgery, the best treatment of aneurism is the Hunterian operation of ligature of the artery leading to it, and in these particular aneurisms, where the possibilities are so grave, where not only sight but even life may be lost, our duty is not only to tie, but, without wasting time in futile experiments, to do as we did in this case—tie at once.—*The Lancet, January* 27, 1894, *p.* 192.

71.—ON CHRONIC TYMPANIC VERTIGO AND ITS SURGICAL TREATMENT.

By Chas. H. Burnett, M.D., Aural Surgeon, Presbyterian Hospital, Philadelphia.

[Dr. Burnett refers to the records of ten cases in which he has operated with success.]

True tympanic vertigo, due to a lesion in the middle ear, chiefly from chronic catarrh of the tympanic cavity, is paroxysmal in character, and attended with tinnitus and deafness in the affected ear. It is caused by the inward pressure exerted upon the labyrinthine fluid by the retracted and ankylosed ossicles. The foot-plate of the stapes is thus unduly pressed into the oval window, and there held by the force named, paroxysmally and for longer or shorter periods.

I have long maintained the tympanic or mechanical origin of most cases of aural vertigo, in opposition to the asserted neuropathic, or labyrinthine cause.

In chronic catarrh of the middle ear there must always be, sooner or later, a disturbed tension in the conductors of sound, whereby at times the membrana tympani and the three auditory bonelets are carried unduly inward, and exert a morbid pressure by means of the impacted stapes upon the fluid in the labyrinth. This irritation in the labyrinth being communicated to the motor filaments of the auditory nerve is reflected by them to the cerebellum, and disturbed equilibration is the result.

This morbid retraction of the auditory chain, and resultant cerebellar irritation, are not constant, but vary with the state of the general health and the condition of the catarrhal middle ear. Hence all true aural vertigo of tympano-mechanical origin is paroxysmal in form.

If the theory is correct that the vertigo in chronic catarrh of the middle ear is due to the retraction of the conductors of sound and mechanical pressure upon the labyrinthine fluid, then the surgical removal of such retraction and pressure ought to relieve tympanic vertigo.

No opportunity to test the truth of this theory offered itself until May, 1888. Then, being consulted by a former patient with chronic catarrh of the middle ear, for the relief of constant tinnitus, and oft-recurring attacks of *severe tympanic vertigo*, which had been superadded to her deafness in the left ear within the previous two years, and finding that the malleus had become adherent to the promontory, I resolved to do what, so far as I know, had never been done for the relief of aural vertigo of a mechanical or tympanic origin, viz.: to cut out the membrana tympani and the malleus, in order to liberate the impacted stapes.

The entire relief from tinnitus and vertigo, which followed immediately upon the operation five years ago, has continued to the present time. All the operations referred to in this paper were performed upon the etherised patient, the ear being illuminated by a six-volt electric lamp, held on the operator's forehead.

The operation of excision of the membrana tympani with the malleus was applied in four succeeding cases of chronic tympanic vertigo with entire relief in all of them. However, as in all of the cases more or less inflammatory reaction followed this operation, I concluded that removal of the incus alone, or of the incus and stapes, the membrana tympani and the malleus being permitted to remain in position, would liberate the stapes and the compressed labyrinthine fluid, as well as, or perhaps better than, total excision of the membrana and the malleus, and probably would not be followed by inflammatory reaction.

From all the cases we may conclude:—(1) That removal of the retractive force of the sound-conductors upon the stapes is the efficient means of relieving the tinnitus, deafness, and vertigo, due to the lesions of chronic catarrh of the middle ear; (2) that the removal of the retractive force upon the stapes can be accomplished efficiently and simply by removal of the incus alone, and even by resection of its long process; (3) that the improvement in these cases is due to the liberation of the stapes from the retractive power of the tensor tympani muscle, and the consequent unimpeded action of the stapedius muscle, which, relieved of the antagonism of the tensor tympani, tends all the more to draw the stapes from the oval window, thus aiding in the isolation and improved mobility of the bonelet, as well as in removing its undue pressure inward upon the labyrinthine fluid; (4) it would seem wiser, therefore, in most cases of chronic

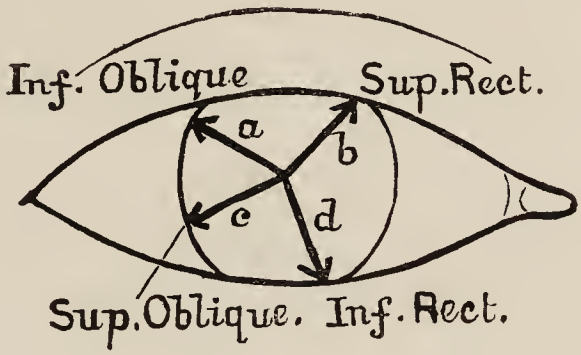
catarrhal deafness, tinnitus, and vertigo, not to sever the stapedius tendon and remove the stapes, but to be content with removal of the incus only; (5) the progressive improvement in hearing noted in many instances must be due to the passive motion exerted upon the ankylosed stapes by sound-waves, which are enabled to reach this bonelet more freely after the removal of the incus.—*Medical News, September* 30, 1893, *p.* 374.

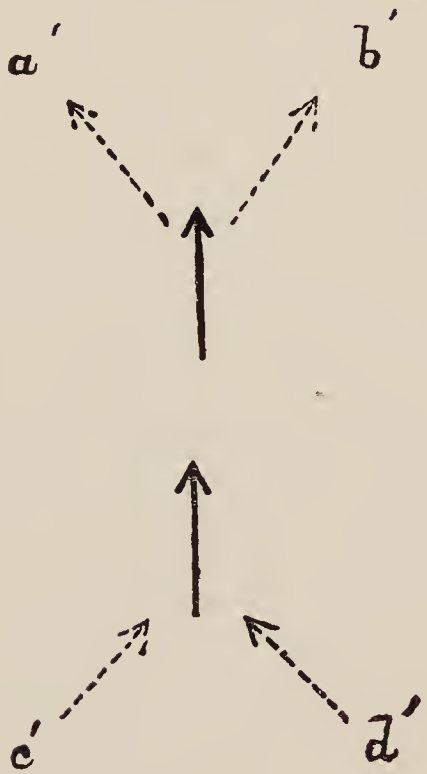
72.—THE DIAGNOSIS OF PARALYSIS OF THE ELEVATORS AND DEPRESSORS OF THE EYE-BALL.

By Charles Wray, F.R.C.S., Assistant Surgeon to the Western Ophthalmic Hospital, London.

In the diagram annexed the action of each muscle and the inclination of the false image when it is paralysed are represented by four arrows on the cornea arranged roughly like a capital X. The two inner limbs of the letter illustrate the action of the superior and inferior rectus, while the two outer ones show the action of the oblique muscles. No mnemonic aid is required for the two recti, but in order to make the actions of the obliqui more easily remembered it may be pointed out that the action of an oblique muscle is the opposite of that of the rectus of the same name. Compare the action of the superior oblique with that of the superior rectus or the inferior oblique with the inferior rectus. If a patient fixes a pencil in the upper part of the field and both eyes are directed on the same point, there will be binocular vision; if, however, the elevator of one eye is paralysed, that eye will lag behind its fellow and there will be downward strabismus, and as a consequence an over-high projection of its image, thus establishing—*Rule 1:* In diplopia in the upper part of the field the upper image is seen by the misdirected eye. In investigating the lower field in the same way, if both eyes converge on the same point there will be no diplopia, thus implying healthy depressors; if, however, there is weakness of the superior oblique or inferior rectus, the affected eye will remain higher than its fellow, and there will be upward strabismus and an over-low projection of its image, thus confirming *Rule 2:* In diplopia in the lower part of the field the lower image is the one seen by the misdirected eye.—It will also be apparent from the diagram that paralysis of an oblique muscle will give rise to inward strabismus and therefore homonymous diplopia. *Rule 3:* Paralysis of an oblique muscle gives rise to homonymous diplopia.—The diagram also shows

that paralysis of a superior or inferior rectus will give rise to external strabismus and crossed diplopia. *Rule 4:* Paralysis of a rectus muscle will give rise to outward strabismus and crossed diplopia.





Application of the rules.—A pencil should be held high up in the upper visual field. If the patient sees but one image, neither eye lags; there are no strabismus and no affection of the elevators (superior rectus or inferior oblique). In the case of diplopia direct the patient to shut the eye he habitually closes to prevent giddiness. If the upper image disappears he has closed the affected eye. He should now reopen it and note should be taken whether the diplopia is homonymous or crossed. If the former, by Rule 3 the inferior oblique is affected; if crossed, the superior rectus by Rule 4. The lower field is investigated

in the same way. Absence of diplopia would imply healthy depressors, while Rule 2 would enable the surgeon to recognise which was the affected eye. The next question would be as to whether the diplopia is homonymous or crossed. If the former, by Rule 3 the superior oblique is paralysed; if the latter, by Rule 4 the inferior rectus. In one or two cases where the diplopia was occasional it was quite easy to discover the affected muscle by taking the patient into a dark room and using a red glass in front of one eye, while in others a diagnosis was made of the faulty muscle in heterophoria by the use of a red glass and convex lenses, which made the patient highly myopic. By means of this schema I was recently able to diagnose paralysis of the inferior oblique in one eye and superior oblique in the other with precision and in an amount of time that would be incredible to those who have not practised this method of examination.—*The Lancet, Nov.* 18, 1893, *p.* 1243.

73.—ON THE EXTRACTION OF CATARACT.

By C. Higgins, F.R.C.S., Ophthalmic Surgeon to Guy's Hospital.

This short paper is founded on the notes of fifty-two cases of extraction without iridectomy and fifty-eight of extraction associated with the removal of a portion of the iris. The operations were performed between May, 1891, and May, 1893. The results are classified (as in two previous communications on extraction of cataract) under three heads—"successful," "partially successful," and "failures." Under the first head are placed all eyes which, aided by a suitable convex lens, could read Jaeger types 1 to 16, had vision for distance=$\frac{6}{6}$ to $\frac{6}{60}$, could tell the time on a watch a fortnight or three weeks after the operation, or, in patients unable to read, could see the stitches in a shirt wrist-band or could thread a large sewing needle. Under the second head are placed eyes that could see to count fingers, tell one finger from another, and whether the back or front of the hand was being looked at. Under the third head are placed all eyes that saw no better or worse than before the operation. The results are fairly good, but are utterly worthless as a comparison between the different methods of performing extraction, and for this reason—the whole of the non-iridectomy operations were picked cases. All patients in whose eyes there was a doubt as to soundness, or where the cataracts were very immature, or if from any cause the patients themselves were considered likely to give trouble—e.g., fat, weezy persons, those who appeared restless, drunkards, or persons out of health in

any way, who came under treatment during the same period—were operated on by extraction associated with iridectomy performed simultaneously, except in some half dozen cases in which it had been previously done as a preliminary, or for some other reason, such as closed pupil, glaucoma, &c. Further, in all cases where any difficulty arose during the operation, such as the iris being accidentally wounded, if the pupil did not readily dilate, or if after the removal of the lens there was any difficulty in returning the iris, or if it showed any tendency to prolapse after return, iridectomy was at once performed, and the case was converted into one of extraction with associated iridectomy. I do not for one moment wish to be considered an advocate for the indiscriminate performance of extraction without iridectomy; on the contrary, I am very strongly of opinion that had I operated on the whole 110 eyes by this method my failures would have been nearer a dozen than—as they are—three only in the two series of cases. I am satisfied, however, that it should have a place in ophthalmic surgery and be performed in suitable cases. The operation has much to recommend it, for it is very easy to perform, the injury done to the eye is but slight, healing is very rapid in the cases which do well, and the appearance of the eye is not altered; the results are as good as in the cases where iridectomy was performed, but I do not think they are any better. As already stated, I picked my cases, and even then I have one failure to record; nor do I ever hope to get the results up to those that are sometimes published—e.g., I have before me the report of an ophthalmic hospital in which considerably over 100 extractions without iridectomy were performed in a year without one single failure, and but three or four cases of partial success only. I have no difficulty in accounting for such excellent results—I simply do not believe the statement. In selecting my cases for extraction without iridectomy I have regard, first, to the patient. I take those who are moderately well nourished, in fairly sound health, and of tranquil disposition; the "dear old ladies who could not do wrong," as the late Mr. G. Critchett used to describe them, are my ideals of suitable cases. With regard to the eye I see that the cataract is fairly mature, the pupil circular and freely movable, the anterior chamber good, and the cornea of fair size. I discard all those cases where the cataract has a bluish look and the iris appears to be pushed forward, and I do not like cases which I may describe as young senile cataracts—i.e., cataracts occurring in patients aged from forty to forty-seven; in such the lens is generally large and rather soft, and a good deal of it is liable to be left behind the iris; the pupils are large and contract sluggishly, and there is almost a certainty that the iris will prolapse if left intact; on the other hand, a lens with

moderately opaque nucleus and with fairly numerous cortical striæ, even though there be much transparent matter between the striæ in persons aged fifty or upwards, I consider quite suitable for extraction without iridectomy. Very old cataracts where the lens has become friable and calcareous are not suitable for extraction without iridectomy, as pieces are sure to be left behind and will very likely set up iritis. All the cases in the non-iridectomy series were senile cataracts. In forty cases (after the operation) the pupil was central or nearly central, circular or nearly so, and more or less movable. In six cases the pupil was drawn slightly towards the incision and was more or less oval. In five cases there was a large prolapse of the iris; the vitreous was lost in one case; in eight cases needle operations were performed. In eight cases severe iritis followed extraction. Prolapsed iris was cut off in one case. A very large prolapse of the iris followed by choroido-iritis was the cause of the loss of the eye in the one unsuccessful case. In one case acute glaucoma followed a needle operation and was entirely relieved by sclerotomy, the pupil being central, circular, and mobile, and the vision $=\frac{6}{12}$. My results are as follows: number of cases, all senile cataracts, 52; successful, 46; partially successful, 4; failure, 1; result not recorded, 1. The results of the 58 cases operated on during the same period by small flap section with iridectomy were: successful, 40; partially successful, 11; failures, 2; not recorded, 5. It will be seen that, though the failures are nearly double, the greatest difference is in the number of partially successful cases; some of these are accounted for by the conditions mentioned below, while others were referable to causes inseparable from the operation. In two cases the vitreous was lost; needle operations were performed in ten eyes, in one at three different times. In six cases Couper's capsule forceps were used for rupturing the capsule: in one case a sharp hook was employed to remove the lens, which was enclosed in a tough capsule which came away entire; in two cases a second iridectomy was required. There were three cases of cortical cataract in this series; the remainder were nuclear, though some occurred in rather young people, and there was a good deal of soft cortex. Several eyes were unsound, and these go to swell the number of partial successes. One eye had retinal detachment. One eye had a high degree of myopia, with extensive choroid changes. Two eyes had corneal opacities. In two eyes iridectomy had been performed for glaucoma, in three for cloud pupils. There is no record of cases of severe iritis following the extraction. The two failures were caused by suppuration of the cornea and iris. The five "not recorded" cases will probably come later into the partially successful class.—*The Lancet*, *November* 11, 1893, *p.* 1180.

Obstetrics and Gynæcology.

74.—ON LAPARO-HYSTEROTOMY.

By N. Senn, M.D., Professor of Surgery in Rush Medical College, Chicago.

Time of Operation.—The consensus of opinion of nearly all modern writers on obstetrics is to the effect that the best results concerning both mother and child are obtained when the operation is performed during labour. The danger from hemorrhage and septic infection is greatly diminished by firm uterine contractions. If the operation is done during labour it should never be delayed unnecessarily, and should not be performed as a last resort, but as soon as it can be determined that it is necessary. Exhaustion, resulting from protracted ineffectual labour pains, greatly adds to the immediate risks of the operation and increases the liability to septic infection. The greatest difficulties encountered in the selection of the proper time are, of course, met with in primiparæ. In cases in which labour does not progress satisfactorily, the capacity of the pelvis should be determined by a careful examination. If this shows that a living child cannot be born, a prompt decision should be made, assistance summoned, and the necessary preparations made. In multiparæ, the previous history is of much importance. If one or more children have been previously delivered by craniotomy, it is more than probable that a laparo-hysterotomy will become necessary.

External Incision.—The external incision is made in the median line, commencing at a point just below the umbilicus. It should only be large enough to permit the passage of the child without tearing. It need not exceed six inches in length. The abdominal wall in the linea alba in pregnant women at the end of gestation is exceedingly thin, often not much thicker than a piece of ordinary blotting paper. It has not infrequently happened that the operator not only cut through the entire thickness of the abdominal wall in making the first incision, but at the same time wounded unintentionally the uterus. The first incision should only divide the skin and superficial fascia, and the remaining structures should be lifted away from the uterus and divided between two dissecting forceps, after which the incision is enlarged by cutting between two fingers.

Uterine Incision.—The pregnant uterus pushes before it the intestines and omentum as it ascends from the pelvis; hence, after opening the peritoneal cavity the only thing that can be seen is the anterior wall of the uterus. The uterine incision should be made in such place and in such a manner as to limit the hemorrhage to a minimum. The uterine vessels are smallest and least numerous in the median line and away from the cervix. The opening in the uterus should, therefore, be made in the median line, half-way between the cornua, and should not extend any farther in the direction of the cervix than is absolutely necessary. It is a well-known fact in surgery that lacerated wounds bleed much less profusely than incised wounds. The uterus should not only be in the middle line, but an examination should be made to ascertain that it is not twisted on its axis. Should this be the case the malposition should be corrected before the visceral wound is made. The median line of the anterior uterine wall can be ascertained by observing the location of the Fallopian tubes. If these occupy the same relative position, a point half-way between them will correspond to the abdominal incision. In order to limit the hemorrhage to a minimum without any artificial hæmostatic agent, I make an incision in the median line of the uterus about six inches in length, cutting down to but not into the large vessels. This incision should terminate two inches or more above the cervix. An assistant now makes pressure on each side of the abdomen in such a manner as to retract the margins of the abdominal incision, and bringing at the same time the uterus well forward into the external incision. The lateral pressure prevents the escape of blood and amniotic fluid into the abdominal cavity. With one cut of the scalpel a button-hole is now made in the centre of the superficial incision, which penetrates the entire thickness of the uterine wall and without any reference to the location of the placenta. Both index fingers are inserted into this opening, which is then enlarged to the requisite size by tearing. The superficial incised wound determines the direction of the lacerated wound. The tear in the deeper tissues may take place somewhat obliquely, but this is not detrimental either in the delivery of the child or the suturing of the wound. Only a few seconds are required in making the opening in the uterus.

Extraction of the Child.—As soon as the opening in the uterus is made the operator plunges the right hand into the uterus and quickly grasps one or both feet and delivers the child as speedily as possible by traction, while the assistant keeps up lateral pressure. The hemorrhage is greatly diminished, or nearly arrested, as soon as the surface of the wound is compressed by the body of the child. As little time as possible

should, therefore, be lost from the moment the uterine incision is commenced until this stage of the delivery is reached. The uterine incision and delivery of the child can be completed in less than a minute.

Elastic Constriction.—I cannot deprecate too strongly preliminary elastic constriction of the uterus. This objection holds good when it is resorted to before the delivery of a child. Its employment after this has been accomplished is attended by benefit. At this stage of the operation no time should be lost in attempts to remove the placenta. If the placenta is implanted over the incision it should be dealt with in the same way as in the delivery of the child in cases of placenta prævia. As soon as the child is delivered the uterus should be brought out of the abdominal incision and constricted with a rubber tube the size of the little finger at a point below the visceral incision. Instead of tying the ligature, it is better to cross it; after making the constriction firm enough, clamp it at this point with a pair of hæmostatic forceps. Prior to making the constriction the uterus should be firmly compressed, so as to empty it as far as possible of venous blood. After the constrictor has been applied, the abdominal wound behind and above the uterus should be covered with a large aseptic compress wrung out of hot sterilized water. This prevents the entrance of blood into the abdominal cavity during the further steps of the operation, and also guards against the escape of the intestines.

Removal of the placenta.—At this stage of the operation the placenta will be found partially or completely detached, and should be removed *in toto* with the membranes. If the placenta is adherent, it is separated at the margin nearest the wound, when complete detachment is effected by inserting the tips of the four fingers of one hand between it and the uterus. Fragments of membranes are looked for and removed. The interior of the uterus is then cleansed and lightly dusted with iodoform for the purpose of preventing putrefaction of the blood, which accumulates after suturing of the uterine wound. During this part of the operation it is important to secure uterine contraction by rubbing, and if necessary, by douching with hot water. Should these measures fail the introduction of a piece of ice into the uterine cavity may bring about the desired response.

Suturing of the Uterine Wound.—This constitutes the most important and prolonged part of the operation. The suturing must be done in a manner that will secure such accurate approximation of the incised and torn surfaces as to arrest bleeding by pressure, and at the same time separate perfectly the uterine from the peritoneal cavity. Only round needles should be used, a small darning needle for the large and an ordinary sewing

needle for the fine sutures. I use four rows of sutures, three of catgut and one of silk. The first row is made of medium sized catgut sutures half an inch apart, and including the entire thickness of the uterine wall with the exception of the peritoneum. This row of sutures is intended to bring and hold in contact the surfaces of the wound, and should, therefore, include considerable tissue on each side. After the sutures have been tied there will be found a little gaping between them; this is overcome by applying a continued suture of fine catgut, which should bring in accurate contact everything else except the peritoneum. The next step in suturing is to bring in contact a strip of the serous surfaces, about one-third of an inch in width the entire length of the wound, by a third row of sutures. This row of sutures is intended to invert the serous margin of the wound on each side to the depth of at least one-third of an inch. A small darning needle and medium-sized braided silk are used in applying these sutures. The sutures are made to include the peritoneum and considerable of the muscular tissue, so as to insure a firm hold. The needle is entered about one-third of an inch from the margin of the wound, and is made to emerge a few lines from the edge, when it is made to enter at a corresponding point on the opposite side, and is brought out one-third of an inch from the margin of the wound. Two sutures to the inch will answer the purpose. The third row of sutures is buried by a continued suture of fine catgut, which includes only the peritoneum and subserous connective tissue. If all of the sutures are properly inserted and tied they can be relied upon in preventing hemorrhage after the removal of the constrictor, even in cases in which the uterus does not contract firmly. The constrictor is now removed and contractions of the uterus secured before the organ is replaced into the abdominal cavity.

Inertia of Uterus.—If the uterus does not contract promptly the organ is stimulated by rubbing, kneading, compression, hot douches, and, if need be, by the faradic current.

Subcutaneous administration of ergot may also be called into requisition. Irrigation of the abdominal cavity is not necessary. Blood and amniotic fluid, both of which being aseptic fluids, are removed by sponging. As soon as the uterus contracts it is returned into the abdominal cavity, and if it can be done the omentum should be drawn over the line of suturing.

Suturing of Abdominal Incision.—Owing to the thinness of the abdominal wall great care must be exercised in closing the external incision in order to prevent later the formation of a ventral hernia. This remote complication occurred in one of my cases. I am now inclined to advise in such cases Edebohls' method of suturing. This consists of a row of subcutaneous sutures of silkworm-gut which include everything but the skin,

and are buried by a second row of superficial sutures. Silkworm-gut is not absorbed, but as it gives rise to but little irritation it readily becomes encysted. The dressing and after-treatment are the same as in cœliotomy for abdominal tumours.—*American Journal of the Medical Sciences, September*, 1893, *p.* 255.

75.—ON THE TREATMENT OF CHRONIC INVERSION OF THE UTERUS.

By Thomas More Madden, M.D., Obstetric Physician to the Mater Misericordiæ Hospital, Dublin.

Cases of the spontaneous reduction of an inverted uterus, even after many years' displacement, are related by several writers; but these instances are so exceedingly rare that they are of no weight in forming the prognosis or in disproving the general necessity for at once endeavouring to replace the womb in its natural situation as soon as the abnormality is recognised. This may be attempted either by gradual and persistent pressure, or by the more immediate and forcible method of taxis.

Gradual pressure is the means which in the great majority of cases of this kind would commend itself to my judgment. For, as Dr. Aveling observed: In applying force for the treatment of inversion it should never be forgotten that, although Nature is a willing servant, she must have time to do her work. Steady sustained pressure, with short intervals of rest, is by far the best way of employing taxis. Sudden and violent efforts at reposition only end in causing laceration and disappointment. The gradual plan of treatment of chronic inversion was first successfully carried out by the late Dr. Tyler Smith, of London, by pressure on the uterine tumour by means of india-rubber air-ball pessaries, aided by gentle taxis for a few minutes time and repeated if necessary.

This method has, however, long since been superseded by the various improved appliances which have been suggested for the same purpose, such as Aveling's sigmoid uterine repositor, by the use of which the author successfully treated eleven cases of chronic inversion, the average time thus required for reposition being only forty hours. "I think," says Aveling, "after considering these facts, you will come to the conclusion that every case of chronic inversion of the uterus can be cured by sustained elastic pressure exercised in the right; and I hope you will not think me too sanguine when I state my belief that the mutilation of a woman by removing her uterus will no longer be necessary in consequence of the impossibility of replacing this important

organ when inverted." The method by which these very satisfactory results were accomplished may be briefly quoted from an abstract of Dr. Aveling's paper in the second volume of the *British Gynæcological Journal.*

Directions for Using the Sigmoid Repositor.—Having diagnosed inversion, determine by touch the size of the fundus, and select a cup of proportionate size. It should be in diameter slightly less than that of the fundus. Next apply the belt round the waist, and then the braces over the shoulder, and fasten them by safety-pins to the belt. This should be done in such a way as to leave room to pass the tapes, to which the rings are attached, between the pin of the safety-pin and the belt. Now the cup of the repositor should be applied to the fundus uteri, and held firmly in position by an assistant while the rings are adjusted, two being taken in front and two behind. The ends of the tapes should next be passed between the safety-pin and the belt, parts of the tapes drawn through, and a knot made at the ends to prevent them slipping back. Tension may be lastly exerted by drawing the tapes up through the pins and fastening them at any point by tying a loop. This loop can be easily pulled out and re-tied, should more or less tension be required. Care must be taken to have tension equally distributed; for, if the front bands be tighter than the back, there arises the fear of the cup being slipped back of the fundus; and the opposite may occur if the posterior bands be tighter than the front. The india-rubber bands passing to the front should be carefully laid outside the labia and packed with cotton wool. If the patient be restless or complain of pain, morphine may be administered. She should be carefully watched and the urine drawn by catheter when necessary. It is difficult to lay down any rule for tightening or loosening the tapes. This will be determined by the practitioner, who must judge by the existing tension, and the tolerance of it by the patient.

Reduction takes place by the cervical method. Pressing on the fundus causes counter vaginal traction on the cervix, making it unroll gradually until the inner os is reached, where a little delay is caused by its being less dilatable. When this point is passed, the body of the uterus soon opens, and admits the cup. The last step must take place rather suddenly, for all patients say they feel that something has "given way," and comparative comfort is the result.

When the inversion has been reduced, the sooner the cup is withdrawn the better, for the cervix immediately begins to close round the metal stem, and the cup becomes firmly grasped in the uterine cavity. The most easy way of removing the cup is to tilt it on end, and bring it through the os as you would a button through a button-hole. If it has been long retained an

anæsthetic will assist. When the cup has been removed, pass a thick sound into the uterus, and, by pressing the point of it forward, the rounded fundus will be felt through the abdominal walls. Being satisfied that complete re-inversion has taken place, syringe out the uterine cavity with iodine water at 120° F., which will cleanse its surface and make the whole organ contract.

Another excellent appliance for the same purpose is Dr. R. Barnes's "elastic pessary." This is formed on the model of a stem-pessary. The stem, suitably curved, is surmounted by a hollowed cap of caoutchouc, upon which the inverted fundus of the uterus rests. To the lower end of the stem are attached strong elastic tubular bands, two of which are brought up in front and two behind, to be made fast to a belt round the abdomen. By bracing up the posterior bands, a forward direction is given to the elastic cap, so that the uterus is pressed up steadily upon the fundus of the vagina, constantly tending to distend this part, and thus to pull open the cervix uteri. It is more convenient than bags, because by loosing the anterior straps ease can be given to empty the bladder, without removing the instrument; and the straps permit of ready and accurate graduation and direction of pressure, due elasticity being preserved.

Immediate Reduction.—In some exceptional instances, however, it has been found feasible, as was demonstrated by Professor White, of Buffalo, to effect replacement, even in cases of inversion of many years' standing, within less than an hour, by forcible taxis under chloroform. I have myself used this method successfully, as far at least as the immediate reduction of the displacement was concerned, in one instance of this kind in which other methods had been ineffectually tried at intervals for four years before her admission into this hospital. The ultimate result in that instance, however, was not such as would induce me to repeat the operation in any case in which it could possibly be avoided. But, as you may meet with some more exceptionally favourable case for its performance than I have done, the following details of this method are here given.

The patient having been put under ether and lying in either the lithotomy or left lateral position, her bladder and rectum being, of course, previously emptied, the operator places his left hand above the pubes and presses down the place vacated by the inverted fundus until he can reach and make steady counter pressure on or over the cervical ring. At the same time, with the other hand in the vagina, he grasps and steadily compresses the displaced organ so as to reduce its vascularity and tumefaction as much as possible, all the while gently and gradually but firmly pushing it back through the cervical ring, replacing

first, if possible, the part that came last, and then, by well-directed pressure with a specially-constructed instrument, such as White's spiral spring repositor, which rests on the operator's sternum, leaving his hands free for the necessary conjoint manipulation, the inverted organ is pressed upward through the os until its complete recession is accomplished. This procedure may require to be repeated on several occasions before its object is attained, and in its employment any sudden force or violence whatever must be most carefully avoided. Otherwise, as has occurred in more than one instance, the patient may die on the operating table or shortly after leaving it from the excessive force thus misapplied. In these cases, therefore, as in all others, let your operations be guided by the old aphorism *arte non vi.*

In attempting to press the inverted organ back through the cervical ring, the pressure should be in the direction of the pelvic axes. With this view care must be taken to press the uterus at first upward and backward into the hollow of the sacrum, and then upward and forward through the brim, in such a direction laterally as to avoid the promontory of the sacrum, which may prove an important obstacle to the reduction if not avoided by this lateral movement, which may be facilitated by Tate's bimanual method of reposition, by the fingers in the rectum and bladder.

In many instances, however, it may be found impossible to effect reposition of a chronically inverted uterus by the manner just described, and in such cases if the urgency of the accompanying symptoms be so great as to imperil the patient's life or to render her existence miserable, it may become necessary to resort either to its attempted replacement by laparotomy or to the removal of the inverted organ.

Thomas's Method.—In the present state of abdominal surgery the former operation, which if successful leaves the patient's uterine functions intact, has been shorn of much of the terrors which surrounded it when originally proposed and successfully performed by Dr. Thomas, of New York. To him is due the credit of having first thus employed intra-peritoneal surgery for the purpose of expanding the constricted cervical ring, from above downward, so as to afford room for the return by taxis of the re-inverted uterus to its normal position.

Extirpation of the Inverted Uterus.—The most facile and in some instances the only method available for the radical treatment of otherwise irremediable cases of inversion is the removal of the displaced organ. This operation, which I need hardly say should be regarded as the *dernier ressort* of the surgeon, was suggested by my respected teacher, the late Dr. McClintock, who in three instances performed it successfully by first strangulating the extruded uterus at the cervix by a ligature, which

was allowed to remain from twenty-four to forty-eight hours, when the removal of the mass below was completed by the écraseur or knife. Since then this procedure has been improved on and made far more rapid as well as less painful than it was in Dr. McClintock's day.

In the only instance in which I have seen the amputation of an inverted uterus necessitated, the patient was a comparatively young woman (under forty years of age), who was thoroughly worn out and exhausted by hemorrhage and pain from inversion of two years' duration, which had resisted every means tried for its replacement. In that case, the removal of the uterus having been consented to, the cervix was first transfixed by a strong needle armed with a stout double silver wire by traction on which the entire uterus was drawn as far down as possible. The cervical portion of the tumour was now encircled by a whipcord ligature, and below this the écraseur was applied and the separation of the tumour very slowly effected. During this excision the shock appeared so intense that it was necessary to suspend the anæsthetic and administer ether hypodermically before the operation could be resumed. Notwithstanding the precautions taken, the resulting hemorrhage was most profuse and alarming, and with great difficulty controlled. The edges of the cervical stump were secured with fine wire sutures, and the vagina was washed out with very hot water and then packed with iodoform gauze. Finally a large compress securely applied above the hypogastrium was forced down as far as possible into the pelvis. This patient ultimately recovered from the shock of the operation as well as the loss of blood, but her life for some time afterwards certainly hung in the balance. I may add that the danger thus narrowly escaped exemplifies the risks generally attendant on extirpation of an inverted uterus, and particularly when, as in that case, this operation is performed on a woman within the period of utero-ovarian functional activity.—*Medical Press and Circular*, *October* 4, 1893, *p.* 348.

76.—ON ANÆMIA OF A GRAVE CHARACTER OCCURRING DURING PREGNANCY.

By Thomas Oliver, M.D., F.R.C.P., Physician to the Royal Infirmary, Newcastle-upon-Tyne.

[Dr. Oliver's paper contains the narratives of three illustrative cases :]

There is a form of anæmia that occasionally develops during pregnancy which is not fully described in the text-books and to which the younger members of the profession may not have had

their attention sufficiently directed. It is in my experience rather a fatal disease. Its pathology is obscure. It may possibly be simply an exaggeration of ordinary anæmia or of the hydræmia met with in women who are pregnant. If so, it would thus be related to pregnancy much in the same way as pernicious and simple anæmia are to each other.

That the blood undergoes certain alterations during pregnancy is a fact that has been long placed beyond dispute. It is several years now since attention was directed to the plethora of pregnancy. The enlarging uterus with its widening vessels and the increased functional activity of the maternal organism, especially in the later months of utero-gestation necessitate an augmentation in the volume of the blood, particularly if the utero-placental vessels are to be filled without the other organs becoming anæmic. Drs. Spiegelberg and Gschleiden have demonstrated this increase in the volume of blood in dogs during the latter months of pregnancy. A similar change occurs in women. With an increase in the volume of the blood there is marked impoverishment of its quality. There is a noticeable reduction in the number of red corpuscles with a diminution of albumen; whilst the white corpuscles are increased, as also is the amount of water, for the serum is found to be deficient in solids. There is, therefore, hydræmia as well as plethora. Under all circumstances, but particularly in pregnancy, it is an easy transition from the physiological to the pathological. A large number of girls who are the subjects of chloro-anæmia fail to become mothers after marriage. In those who conceive, the early months of pregnancy are not necessarily characterised by the presence of more serious symptoms than are met with, under similar circumstances, in their healthier sisters. It is in the later months of pregnancy that symptoms become more pronounced, especially if the appetite fails. Even then the pregnancy may go to term, and the act of parturition be accomplished without any unusual loss of blood. The convalescence of a chloro-anæmic mother is at times apt to be tedious, for the blood has to undergo a process of involution just as the uterus does. Faults in the blood antecedent to and during pregnancy do not favour an early return to health. Some writers maintain that in anæmic women the separation of the placenta is accompanied by a severe loss of blood. Such is not my experience. It certainly is not borne out by what occurred in the three cases I have seen. In the second case, which I have reported at length, a brief history of the disease I am describing is given. The patient was anæmic to begin with. She passed through the early months of pregnancy fairly well, but all the time an anæmia was developing, which ultimately became so profound that the friends of the patient

were struck by her extreme pallor. In addition, there was repeated vomiting, the patient complaining of great breathlessness, syncope, and exhaustion. The symptoms tend to become aggravated as the pregnancy advances. They thus give a serious character to the illness, which is frequently fatal. Dr. Spiegelberg says that of twenty-five cases collected by Graefe almost all died, most of them rapidly and very shortly after labour; only one patient was cured, and two are spoken of as having improved. I am inclined to regard this disease as being something more than ordinary anæmia or the simple hydræmia of pregnancy. How far it resembles pernicious anæmia I am not prepared to say. Their pathology is obscure. The blood-forming organs were apparently at fault. There seemed to be deficient formation rather than increased disintegration of red corpuscles.

Given the case of an anæmic woman becoming pregnant and who is unable to make even sufficient hæmoglobin for herself, how great must be the demands made upon her blood-forming organs as time goes on. In the early months of pregnancy hardly any demand is made and consequently at that time nothing arises to create anxiety, for the placental circulation has not been established; but as each month passes the mother keeps giving to the fœtus by this channel, increasing quantities of iron to form its hæmoglobin. There is therefore a drain upon the mother which her reserve powers can scarcely meet. It is thus rather than by a disintegration of red blood-corpuscles that I seek to explain the development of this grave form of anæmia during pregnancy: it is the giving away of iron by the maternal organism to the growing infant in utero. Spread, as this process is, over a period of months and with a drain increasing as time goes on, this is met in the healthy woman by increased appetite and by improved blood-forming powers; but in the anæmic woman there is enfeebled ability on her part to form hæmoglobin, and when to this is added the hydræmia that is gradually developing, an explanation is found of the serious nature of this form of anæmia in pregnancy. All my cases proved fatal, in spite of the most careful treatment and attention.

The presence of a large quantity of iron in the milk of the suckling woman will explain the relationship of anæmia and galactorhagia. Regarding pregnancy as a cause of this form of anæmia, the question of the induction of premature labour naturally suggests itself. In Case 2 it was most carefully discussed by Dr. Smith and myself. On the one hand, it was only too apparent that the patient could not live until the normal termination of her pregnancy: and, on the other, it was just as clear that, whilst in the induction of premature labour

lay the hope of saving her, the strength and general condition of the woman were such as to arouse in our minds the gravest doubts as to the successful issue of the case. We found ourselves placed in a most embarrassing position. The induction of premature labour was called for, and, much as this is admitted to be in such cases a necessary and justifiable line of treatment, it was in our patient neither possible nor practicable. Transfusion of blood would in all probability not have given any better result—it was then too late; besides, cases in which it has been tried have shared a similar fate to my own.—*The Lancet, January* 6, 1894, *p.* 13.

77.—ON CERTAIN CHANGES IN THE OVARY ASSOCIATED WITH MENORRHAGIA.

By C. J. Bond, F.R.C.S., Surgeon to the Leicester Infirmary.

In looking through the notes of some fifty cases of removal of ovaries or appendages for various causes, which have come under my care during the last few years, there is a small group of eight cases in which small cystic ovaries were removed, in which the tubes were healthy, and in five of which the prominent symptom was menorrhagia of a pronounced type, being in three of them of a most violent kind—as violent and uncontrollable as is found in the worst cases of fibroids and immediately threatening life. In these five cases the ovaries were of the type described by Lawson, Tait, Pozzi, and others as the "small cystic ovary." That is, although there was some considerable amount of ovarian tissue left, yet, in addition to a marked connective tissue proliferation or oöphoritis, the organs contained several, or numerous cysts varying in size from that of a nut to that of a walnut or larger; and a further point to which I would draw attention is the fact that these cysts contained dark blood-stained serum—there had been, in fact, extravasation of blood into the cystic cavities, and thus an indication is given of the amount of ovarian engorgement in these cases. In the remaining three cases the cysts contained clear fluid, the marked congestion was absent, and the symptoms lacked the pronounced one of excessive menorrhagia, although prominent menstrual disturbance of a painful and nervous kind was present. It has, of course, been known for some time that these small cystic ovaries are frequently associated with menorrhagia. This has been pointed out by Lawson Tait and by Pozzi; but I doubt whether it is even yet sufficiently realised by medical practitioners, that persistent and violent menorrhagia, uncontrollable

by curetting, may, and does, occur with a normal, or only slightly enlarged, uterus, and is due to ovarian disease alone. There is, I think, no doubt that the connection between the sanguinolent character of the cyst contents and the excessive uterine hemorrhage is more than a mere coincidence. The blood-stained fluid means severe ovarian engorgement, leading to extravasation, and it is probable that an engorged ovary provides a more powerful stimulus to the menstrual process than a healthy one.

The differences between this form and the ovary affected with the large cysts of the ovarian cystoma capable of indefinite growth are very marked clinically, since the latter form has very little influence on the menstrual process, and from the researches of Gallard it appears to as frequently cause a diminished flow as an increased one. Secondly, pathologically, the researches of many observers—Waldeyer, Doran, and others —seem to show that the ordinary ovarian cystoma originates in an epithelial overgrowth of a glandular type, with minor differences pecular to the various forms of cyst. On the other hand, the early changes in the small cystic variety have not been fully worked out ; it has, however, no tendency to pass into the common form of cystoma, and from the examination of numbers of sections of such ovaries removed by myself it appears, I think, certain that the early change is one of epithelial degeneration rather than growth, with effusion or extravasation into such degenerated follicles, which become recognised as cysts. Such sections show a more or less irregular cavity filled with the coagulated serous or bloody material, and this merges directly into the fibro-vascular tunic without the intervention of an epithelial layer. Sometimes some epithelium can be found in an irregular and degenerated condition, and the surrounding ovarian stroma shows all degrees of connective tissue overgrowth, the result of oöphoritis, and the surface of the organ often has a toughened, leathery, dull character from the same cause. It is, I think, clear that these cysts originate in Graafian follicles, which perhaps in a few cases undergo a pathological change after rupture. In some rarer cases cystic change may occur in a corpus luteum itself, as mentioned by Pozzi, or more often in those cysts which, more deeply placed in the substance of the ovary, fail to reach the surface, perhaps owing to the increased fibrous character of the ovarian tissue, and which undergo the cystic degeneration without even rupturing at all. The main feature of the change is that of disordered involution. Extravasation occurs from the surrounding vessels into the cavity, and, lacking the safety valve of the normal rupture at the time of shedding the ova, the follicles tend to enlarge mechanically up to a certain limited size, as opposed to the

unlimited enlargement by epithelial growth, and secretion, of the larger cystomata. The real difference between the condition of the small cystic ovary, which increases the menstrual flow, and the ovary in ordinary cystoma, which does not affect it, is one of vascularity and function; in the former case there is vascular engorgement and cysts which in the early stages are functionally active; in the latter there is less vascularity and functionless cysts as far as ovulation is concerned, and the irritated or small cystic ovary, by transmitting a stronger stimulus of nidation, causes a more vascular uterus, with a corresponding increase of hemorrhage when the membrane is shed and extravasation occurs. It is, in fact, as if the exaggerated change which occurs in a ruptured follicle with pregnancy, which is dignified by the name of "corpus luteum," occurred in an unruptured follicle in an exaggerated degree, as if the ovarian stimulus were one of constant pregnancy or overgrowth of decidual membrane, while the uterus lacks the inhibitory influence of the encapsuled ovum to prevent its breaking down. A true view of the pathology of such ovarian disease would, I think, regard it as an advanced condition of the state which is found in many ovaries, even in those of young unmarried women; such ovaries are called "normal," and they are so in the sense that they cause no symptoms or disorders of menstruation, but the condition is really pathological, in the sense that the normal evolution and involution of the follicle are not carried out, and it is an interesting point as to the generality and existence of this faulty physiology in the various grades of the animal kingdom. It is known that mares are especially liable to the change. The fact that all stages can be found, between the so-called normal ovary and the small cystic ovary which produces such marked symptoms, is a strong argument in favour of the view that the latter condition is the terminal stage in a pathological series.

Clinically, these small cystic ovaries not only cause increased menstruation, but in some cases increase in size of the body of the uterus—not necessarily increase of area of cavity, but increase in the thickness of the uterine wall; the organ is in these cases big, sodden, and heavy, and it is possible that some cases, which show a great tendency to flooding after miscarriages, are caused by a want of uterine vigour and tone, being thus indirectly due to diseased ovaries, and that, in the cases of unexplained recurring tendency to early abortion, the real source of the disease is the excessive ovarian stimulus to the spinal centres, overcoming the inhibitory influence of the growing ovum, and thus producing a menstruation or early parturition. And if the lesson of the use of the pessary in uterine displacement be fairly studied it will, I think, be found

to be more and more the case that so-called displacements of a normal uterus cause but few symptoms when the appendages are healthy, but that where uterine displacements do cause symptoms, those symptoms are either due to, or exaggerated by, the abnormal condition of the ovaries or tubes upon which the displacement acts. These small cystic ovaries also in some cases prolong menstruation long after the normal period of uterine involution. I have seen one case of somewhat excessive menstruation at the age of fifty-eight in which the ovaries were cystic. In cases of uterine fibroids the ovaries are frequently cystic, as has been mentioned by Lawson Tait, and I have several times seen the cyst contents sanguinolent in this affection. How far the ovarian change is a secondary one, or how far it has a primary influence in producing not only the menorrhagia, but also the overgrowth of the uterus, it is not possible to say at present. Many cases, however, occur in which the ovaries are not cystic, and on the other hand the engorgement of the uterus may extend to the ovary and produce by increased congestion the pathological change in the follicles ; this is rendered probable by the fact that an enlarging uterus in the case of pregnancy exercises some influence on the ovaries, as is shown by the peculiarities of the formation of the corpus luteum.

With regard to the treatment of these cases, a true appreciation of their pathology, and a recognition of the ovarian origin of the uterine symptoms, will lead to a more rational and therefore a more successful, treatment. The futility of curetting as a means of permanent cure and the uselessness of all forms of merely intra-uterine medication or mechanical treatment, except as palliative means will be understood ; the pelvis will be more frequently explored from above, and the ovaries themselves will be treated. While it is right to have certain rules clearly defined in one's own mind as guides in coming to a decision, in each individual case, as to the desirability, or otherwise, of removal of the ovaries, the subject is still too much the battle-ground of gynæcological opinion to allow the expression of any dogmatic statement. Personally, I should be inclined to say that where, in the absence of other causes, there is reason to believe that the cause of the symptoms lies in the ovaries, and that further the symptoms are of sufficient intensity to either endanger life or to lead to chronic invalidism, a case is made out for abdominal section and exploration ; that, further, having the appendages within sight, or touch, or both, the guide should be as follows : Any gross disease of tubes or markedly pathological state of ovaries of course decides the point at once, whereas in the case of lesser degrees of pathological change, where the oöphoritis is not very marked or the cysts are few and small, the fact already mentioned—namely, that such a

condition is in reality one stage in a pathological series from normality to marked disease—should be borne in mind, and the decision should be taken, not so much on the amount of disease detectable by sight or touch in the ovaries, as on the intensity of the symptoms, and especially the clearness of the evidence which connects them with an ovarian origin, and the absence of other evidence, especially of central nervous system origin. Hitherto I have spoken only of total removal of the diseased organs, but already there has been suggested and put into practice—notably by Pozzi and others—a conservative treatment of the appendages ; it consists in the freeing and replacement of adherent and displaced organs and in the evacuation of small cysts, with the destruction of their lining membrane by cauterisation. As far as conservative treatment is concerned with the liberation of adherent organs and the replacement of displaced ones, there can, I think, be no doubt that the principle is sound and the future promising ; but, when dealing with such morbid conditions as the cystic change mentioned above, it is necessary to speak with caution, for if the functional origin of these cysts is borne in mind it is, I think, justifiable to express a doubt whether an ovary which has commenced to functionate in this abnormal manner will not continue to do so even after the evacuation and cauterisation of any cysts already formed.

I have so far spoken only of this special and peculiar change in the ovary, characterised by a fibrous overgrowth due to oöphoritis, and the presence of small cysts as a cause of menorrhagia, and for this condition radical treatment is required. The experience of every one will of course suggest the association of menorrhagia of varying degrees of severity with less advanced pathological changes—for instance, a common cause of minor degrees of menorrhagia is a prolapsed, and therefore a congested, ovary, with its periodic hypercongestion at the monthly periods ; there are also the various causes which produce congestion of the ovary without displacement.—*The Lancet, April* 7, 1894, *p.* 852.

78.—OPERATION FOR VESICO- AND RECTO-VAGINAL FISTULÆ.

By A. Hugh Ferguson, M.D., Professor of Surgery in Manitoba Medical College.

I. Vesico-Vaginal Fistulæ.—Complete as the labours of Gosset, Simon, and Sims appear to have been in instituting and establishing rational operative procedures for the cure of vesico-vaginal fistulæ, yet a few failures, with consequent disappointment

to patient and surgeon, lead one to believe that the present methods of treatment may be considerably improved. Disappointing results, obtained by methods that are old and tried, induced the writer to venture an improvement of which "flap-splitting" is the central idea. As in the repair of the perineum, the success of the operation depends largely on the principal that no tissue is removed. No originality is claimed except as to the manner in which the flaps are formed and coapted by a deep buried suture.

The fistulous opening being exposed an incision is made through the mucous membrane of the vagina at the distance of the full eighth of an inch from the margin of the fistula; this incision is extended till it completely encircles the opening.

The line of incision is carefully deepened till the lining membrane of the bladder is reached, and great caution is exercised in retaining the integrity of that membrane. A stream of sterilised water directed on the wound keeps it free from blood. In this manner a circumferential flap, hinged by the mucous membrane of the bladder, is obtained. This flap is inverted into the bladder, thus forming a roof for the broad raw surface exposed, and it is held in such position by a continuous suture of fine chromic catgut, inserted in such a manner that the stitches do not pierce the wall of the bladder.

A narrow strip of vaginal mucous membrane, which, owing to its density, retains a suture well, becomes part of the lining of the bladder, and causes no disturbance in its new position. The artificial opening is now closed and water-tight, and to complete the operation it is only necessary to pass and tie silkworm gut sutures on the vaginal surface in the ordinary way; great care must be taken lest these sutures include the mucous membrane of the bladder.

The vagina is carefully packed with iodoform gauze. This packing is left *in situ* for about eight days; it is then removed, the vagina is thoroughly irrigated, any loose suture withdrawn, and the packing renewed. This cleaning and dressing is repeated every five or six days for about three weeks.

In my opinion all the sutures should not be taken out on the eighth or tenth day (as recommended by so many operators); as long as a stitch is not easily moved in its bed it had better be left alone till fibrous tissue is fairly formed. When the vagina, cervix, and when necessary the uterus, have been rendered aseptic before the operation was begun, and the wound treated as above, direct union by first intention should ensue.

The chief advantages of this operation are:—(1) There is no loss of tissue; (2) a very broad, raw surface is obtained for apposition; (3) at the site of the operation there is a projection into the bladder which forms a roof for the raw surface, and

urine cannot trickle along sutures ; (4) should the mouth of a ureter be exposed at the edge of the fistula it is not injured, but merely turned into the bladder ; (5) it obviates the danger of secondary hemorrhage occurring into the bladder.

This operation has been successfully performed by its author three times, and in each instance union by first intention has been secured. The patient, in one instance, had been operated upon by reputable surgeons no less than four times, deriving therefrom no permanent benefit. Three weeks after the date of my operation she left the hospital perfectly and—as I have since repeatedly learned—permanently cured.

II. Recto-Vaginal Fistulæ.—In looking over the literature of the treatment of recto-vaginal fistulæ, and noting the colotomies of Rose and Czerny ; the episiocleisis of Baker Brown, Slaviansky, Gerasimovitch, Crepsi, and Iakovleff (six cases in all) along with the rectangular flap method of Le Dentu, the writer felt justified in attempting a new procedure.

A circumferential flap is made from the vaginal surface ; the incision extends to, but not through the mucous membrane of the rectum. The edge of the flap is now seized with four pressure forceps, inverted into the rectum, and a small pile clamp applied to it.

The free portion of the flap external to the clamp is burned off with the actual cautery, but the clamp is not removed until interrupted sutures of silkworm gut are inserted in the usual way without grasping the mucous membrane of the rectum, and tied on the vaginal surface. A rectal tube well wrapped with iodoform gauze is placed in the passage, while the vagina is also packed with iodoform gauze. In this manner an extensive denuded surface is secured and readily unites when properly coapted. The rectal flap is cauterised, thus lessening the liability to septic infection from that source. The rectal tube and vaginal pack further guard the wound against germs, and act as splints to ensure that rest so necessary to primary repair.

The after-treatment consists in keeping the parts as surgically clean as possible. The rectal tube is not disturbed for about a week, and when it is removed a copious enema is administered to move the bowels the first time after the operation. The rectum is washed out with plain water every twelve hours for the following week, and during that time a rectal suppository containing 5 grains of iodoform is inserted every six hours. The packing in the vagina is changed every six or eight days ; the stitches are removed at intervals between the fourteenth and twenty-first days. It is better not to remove them all at one time. Previous to the first evacuation of the bowels the diet must be of a liquid consistency, and as free from excrementitious materials as possible.

My experience of the above detailed method of treating recto-vaginal fistulæ is limited to one case, which was completely cured by the one operation.—*British Medical Journal, February* 24, 1894, *p.* 406.

79.—THE TOXÆMIA OF PREGNANCY: ITS DIAGNOSIS AND TREATMENT.

By Edward P. Davis, M.D., Visiting Obstetric Physician to the Philadelphia Hospital.

By the term toxæmia of pregnancy we understand a condition occurring in the pregnant woman in which toxic material is present in the body in excess. There can be no nutrition without the production of waste, and when the dual existence in the body of the pregnant patient is considered, it is not strange that an additional quantity of waste products is present. The excretion of this material is effected largely through the agency of the kidneys, and hence attention was first attracted by those cases where kidney failure was the first and prominent symptom; but as our knowledge of pathology is increased, we see that the kidneys are but partially involved, and that we must look farther in order to understand the condition.

The mode of production of the toxins, or poisonous waste, which threaten the pregnant woman, is not clearly explained. The usual metabolic processes account for a portion of the material present, while a certain number of cases point strongly to an acute intoxication with the products of bacteria. While the chain of evidence in the latter is not complete, they offer a most suggestive explanation for conditions not hitherto understood. It is the purpose of the present paper to consider methods of clinical investigation which have been found useful in the diagnosis of toxæmia, to mention agencies proven efficient in treatment, and to report illustrative cases.

The clinical investigation of the action of the kidneys during pregnancy has received so much attention that we omit reference to methods of examination commonly in use. It is especially important that the amount of urine secreted be carefully estimated. The value of microscopic examination of urinary sediment can scarcely be overestimated in the study of pregnant patients. In the cases furnishing a basis for this paper we have examined the urine to ascertain its specific gravity, colour, reaction, the presence or absence of albumin, of glucose, lactose, and urea. The two constituents especially important I consider to be urea and sugar or acetone.

The literature of the subject furnishes abundant proof that solutions of urea may be injected into animals without causing convulsions; it is also true that a patient may endure a temporary suppression of urine which is almost complete, may escape convulsions, and recover; but the fact remains that the percentage of urea in the urine of the pregnant woman is a valuable indication of the efficiency of her excretion by means of the kidneys. It has been my custom to estimate the percentage of urea before and after labour, and wherever the percentage of urea has fallen below 1·5 we have found occasion to stimulate the patient's excretory processes, with a distinctly favourable result in all cases where symptoms of toxæmia were present.

In 84 cases in which a total of 564 examinations was made (*i.e.*, 331 before labour and 233 after parturition) the average percentage of urea was found to be 1·4 per cent. before labour. It was noticed that in the majority of cases the amount of urea increased after the delivery of the patient, the average being 1·9 per cent. On the other hand, marked diminution in the quantity of urea occurred only in cases either having, or threatened with, eclampsia, or manifesting symptoms of marked toxæmia.

Symptoms of toxæmia which called for active treatment were a gradual diminution in the excretions of the patient, both solid and liquid; diminution in appetite, with complaint of slight nausea or gastric distress; headache, a clammy skin, or, in some instances, a dry skin with deficient perspiration, and lassitude, mental, and physical. The patients under observation were all expected to do light housework up to the time of labour, and hence a good opportunity was afforded to judge of the occurrence of lassitude.

In the study of these cases we have not regarded the presence or absence of serum albumin as indicating toxæmia. Where a microscopic examination of the urine showed the presence of casts and epithelium, the concurrent presence of albumin was, of course, significant; but where the microscope failed to find pathological elements, and albumin was present, it was not regarded of importance. In about one-half of the patients, sugar was present at irregular intervals during pregnancy and the puerperal state. It was found in small quantity, and usually in the form of lactose, or glucose. The presence of glucose and lactose bore no direct relation, so far as we could observe, to a toxic condition of the patient. Lactose was frequently more abundant as the secretion of milk became established. In cases of toxæmia, however, glucose was present, and possibly acetone would have developed had excretion not been freely stimulated.

Of especial interest in considering the question of toxæmia in the pregnant and puerperal state is the relation which bacteria and their products may bear to the pathological condition present.

The fact that the toxæmia of pregnancy results in a condition of marked anæmia after the puerperal period is illustrated by the case of a patient who suffered from persistently defective excretion during her pregnancy and after labour. Her child perished from pulmonary catarrh, and she herself was transferred to the medical wards of a hospital, where her condition of anæmia and kidney failure could receive more extended treatment.

It is quite possible for a condition of marked toxæmia to be present in which the examination of the urine fails to reveal either casts, albumin or marked deficiency in urea.

The treatment of the toxæmia of pregnancy must be instituted with reference to promoting the action of five excretory organs—namely, the kidney, liver, intestine, skin, and lungs. The usual precaution of limiting the patient's diet largely to milk is of course indicated, but when nutrition suffers from the monotony and distastefulness of milk, there should be no hesitation in giving a more liberal diet to preserve the patient's strength. Fish and oysters, the white meat of fowls, fruits in abundance, and the more digestible sorts of bread, fresh and nutritious, form a usually acceptable diet. Pure water must be taken, but not in excess, as it is possible to seriously embarrass the kidneys by a sudden increase in the amount of fluid taken. Tea had better be omitted, while the diuretic effect of coffee is sometimes of value.

The literature of the subject affords abundant evidence that the liver has an important part in the production of this condition. However theory may dictate regarding treatment, I have no doubt of the practical advantages following the occasional use of calomel and soda to promote the action of the liver and kidneys as well. This should be followed by a purgative producing free and liquid stools. Salts of potassium should be avoided because of the irritant properties possessed by potassium when introduced into the fluids of the body. Colocynth is a convenient and efficient drug for this purpose. The bath and pack are the only efficient remedies which experience suggests in promoting the excretory action of the skin. Where the hot bath is depressing, the warm bath, accompanied by the ingestion of a small quantity of hot water, is of decided value. This may well be taken just before retiring, thus avoiding the danger of exposure to cold following the bath. Light woollen should be worn next the skin in summer or winter. In addition to the bath, in severe cases the pack in

sheets wrung out of hot water, or the hot-air bath, is of the utmost value. Further, where a condition of moderate toxæmia exists, or continues a long time, yielding to treatment with difficulty, great benefit will be found from gentle massage ; this should include the limbs and back, avoiding the abdomen. It may well be given at night, followed by the bath, and often secures for the patient a refreshing sleep.

The importance of fresh air in abundance for these cases is sometimes overlooked; in summer, conditions for obtaining good air are very commonly present; but in winter it is necessary to attend to this point.

Especial attention is called to the diagnosis of toxæmia from the general condition of the patient's nervous system ; a careful and experienced observer can detect a very different condition in the toxæmic patient from the simple nervousness and apprehension of the pregnant woman ; the condition is that of intoxication varying in degree ; thus we recall the case of a woman admitted to a hospital and soon after taken with severe eclampsia; after a dangerous illness of several days she recovered, having been utterly oblivious of her coming to the hospital, and of her illness, until she was virtually convalescent. She had been as completely intoxicated as if drugged with alcohol or opium. An interesting manifestation of this condition is afforded by the peculiar mania often seen in eclamptic cases.

The clinical picture afforded by the toxæmic condition must impress itself upon the careful observer as one of an intoxication showing itself by a disordered nervous system. We regard as cardinal symptoms of this condition the nervous phenomena already described, and diminished excretion. Upon these a diagnosis is to be made and the treatment of the case conducted. As regards the cardinal principals of treatment, we are opposed to the use of sedatives and narcotics ; the patient's need is for elimination, and that must be secured as promptly as possible. The sedative effect of eliminative treatment is often remarkable ; thus in the case of a physician's wife already described, she asserted that the most enjoyable features, physically, of her life during the last weeks of her pregnancy, were the warm bath taken at evening and the few hours of refreshing sleep which followed. She also recognised the distinct benefit obtained by free purgation.

In the face of threatened eclampsia, our duty lies in prompt emptying of the uterus. Here an anæsthetic is often requisite at the time of labour, and my preference is for chloroform. The danger of delay in emptying the uterus is too familiar to require mention, and when the patient's symptoms are not relieved by thorough elimination from the intestines, skin, kidneys, liver, and lungs, the time for delay is certainly past,

and we shall not be faithful to our duty if we allow a patient to go further in this dangerous condition. The recent literature of eclampsia contains striking evidence of the value of terminating the pregnancy by dilating the uterus and removing the fœtus. If this be done under anæsthesia and with antiseptic precautions, the results are sufficiently good to command a careful attention for this method of treatment. In my experience, it is a mistake to employ drugs which tend to depress the patient and favour the occurrence of œdema; such is pilocarpine. When stimulation is needed, I have seen benefit from alcohol, digitalis, and in cases of eclampsia when labour had terminated and exhaustion threatened, in the hypodermatic use of strychnia.—*The American Journal of the Medical Sciences, February*, 1894, *p.* 147.

80.—ON ACUTE ANTEFLEXION OF THE UTERUS IN THE LATER MONTHS OF PREGNANCY.

By James Braithwaite, M.D., Obstetric Physician to the Leeds General Infirmary.

A case of pregnancy was sent to the Leeds Infirmary in September, 1892, with a letter from two medical men of experience, saying that they believed the case to be one of extra-uterine gestation.

The patient was aged 34, and had had five children, the last two years ago. In April, 1892, the patient believed herself to be again pregnant. In July she began to bleed a little every day but in small amount, and this hemorrhage continued up to the time of her admission in September. There was a large rounded central abdominal tumour reaching half a finger's breadth above the umbilicus, and occupying the greater portion of the abdominal cavity below. Whether this was the womb or not it clearly contained a living child, for its movements could be felt by the hand. Vaginal examination found a rounded swelling anteriorly, and the uterus apparently lying behind it, and with no continuity with it so far as the finger alone could ascertain. The finger, pressed up between the tumour and the cervix, did not arrive at any point of union. The uterus also seemed to be movable independently of the tumour to the moderate degree which its cramped position behind it admitted, for it was pressed against the sacrum. This, as it will be seen, turned out to be a mistake, but at the time it gave me this impression. The cervix was very dilatable, and I passed an index finger up, and at a height of about 2 inches reached the top of a very elongated cervix. The finger could then be turned forward into the cavity of the uterus, and the fœtal head, covered by the membranes, was felt. Labour came on the same day, and was concluded satisfactorily.

I certainly thought on first examination that the child was not in the uterine cavity. In the year 1888 I was associated with Mr. E. O. Croft, of Leeds, in a similar case.

Precisely the same condition was found as in the case already described, and much doubt existed whether the child was really in the womb or not. The cervix, or the uterus, lay directly behind the tumour and parallel to it, and no continuity, or but a doubtful one, between them could be detected. I dilated the cervix sufficiently to admit of the passage of the finger, which at the height of fully 2 inches reached a ledge anteriorly, over which it could be passed somewhat downwards and forwards into the uterine cavity. The ledge was formed by the angle between the cervix and body, and it was necessarily pressed downwards to admit of access to the uterine cavity. I ruptured the membranes, and the labour was completed the same evening or next morning by my friend, but it was difficult.

At the beginning of November, 1892, I admitted another case into the ward, precisely like the other cases related. It should be noticed that in these cases there was anteflexion only, without more version than enough to draw the cervix upwards a little. Secondly, that the cervix was somewhat elongated and pressed between the body of the uterus and the sacrum. It was not carried up almost out of reach as in the ordinary anteversion with pendulous belly, but it was a little elevated. Thirdly, all the cases were primiparæ, and, as might be expected, in none of them was there what is known as pendulous belly with separation with the recti muscles. Indeed, the two conditions—acute flexion and pendulous belly—are inconsistent with each other, for it is the absence of yielding in the abdominal walls which favours the flexion.

Although there are many references to anteversion with pendulous belly, there are, as far as I can discover, on record only two cases of the condition which forms the subject of this paper. Matthews Duncan, in his *Diseases of Women* (1886, p. 397), says that in advanced pregnancy we have two kinds of anteversion; one, common pendulous belly, the other extremely rare; he adds, "I have seen only one case of it in a primipara." In this case the uterus was anteflexed, and could not be replaced as in common pendulous belly. It was, in Duncan's opinion, not displaced secondarily, but grew into this peculiar shape and position.

A second reference to it is in the American *Journal of Obstetrics* (February, 1890, p. 156) in which a case is recorded as one of "dextro-torsion of the pregnant uterus simulating extrauterine pregnancy." This case is precisely like those I have related except that the body of the uterus fell to the right side instead of directly anteriorly. The writer of this paper is Dr. W. H. Wenning, of Cincinnati. The case so exactly simulated extrauterine gestation that after numerous consultations and examinations Dr. Wenning and his friends proceeded to abdominal section.

On opening the body Dr. Wenning says, to use his own words, "general surprise and consternation seized us all," for nothing was found but the pregnant uterus bent like a retort.

Dr. Wenning made a complete search into the German literature of the subject and he states that Küstner relates a similar case to his, except that the patient was in an earlier state of pregnancy. Barnes, in his *Diseases of Women* (1873, pp. 671-672) observes: "In some rare cases of early pregnancy the fundus has been locked behind the symphysis pubis in complete anteversion, forming a counterpart to the retroversion of the gravid uterus."

This anteflexion of the early months has, however, no direct connection with the present subject, which is the resemblance such cases in the later months have to extrauterine gestation and the difficulty of diagnosis. It is probable that this condition is more common than has been supposed, and its similarity to extrauterine gestation must be remembered.

In every case, however, of advanced or full term abdominal ectopic gestation which I have seen—and I have now operated upon six—the uterus lay in front of the sac containing the child, not behind it. This is a most important point in the diagnosis, but there can be no absolute certainty until the finger is passed up the dilated cervix.—*British Medical Journal, January* 13, 1894, *p.* 59.

81.—ON PELVIC ABSCESS.

By C. J. Cullingworth, M.D., F.R.C.P., Obstetric Physician to St. Thomas's Hospital.

The simplest form of pelvic suppuration is that which occurs in the connective tissue, and it is this form to which I should like to see the use of the term "pelvic abscess" restricted. It will immensely facilitate our study of this affection if we recognise, once for all, that inflammation of the connective tissue in the pelvis differs in no way from inflammation of the same tissue in other parts of the body which are more accessible to sight and touch. This cellular area has for its upper boundary the peritoneum, which can be readily stripped from the whole of the pelvis except in the following situations—viz., the anterior surface and sides of the rectum. The upper part of the posterior wall of the vagina, the posterior surface and fundus of the uterus, the anterior surface of the body of the uterus, and the posterior surface of the bladder. As all these parts where the peritoneum is firmly attached are situated more or less in the middle line, it follows that the cellular area of one side scarcely communicates with that of the other except along the tract which lies between the upper part of the cervix and the bladder, so that cellulitic exudations are mostly limited to one side. The most common source of such exudations is septic absorption

through lacerations of the cervix and of the upper part of the vagina, occurring during labour, the latter accident accompanying the use of the forceps much more frequently than is supposed. I have over and over again, in cases of pelvic cellulitis seen in consultation, found wounds of the vagina that had been entirely unsuspected by the medical practitioner in attendance and that had evidently been caused by the projecting edge of one of the blades of the forceps. Such wounds, if they remain aseptic, readily heal ; but it often happens that septic matter finds its way into them, and then pelvic cellulitis results. Only less important than parturition in respect to the etiology of this affection are the various surgical measures practised on the vagina and cervix. Before the necessity of rigid aseptic precautions was understood and generally acted upon, the most trifling surgical proceedings in these parts were apt to be followed by an attack of cellulitis. With regard to abortion, I am inclined to believe that septic infection following it seldom, if ever, take the form of pelvic cellulitis, for the simple reason that, there being no over-distension of the cervix or wounding of the vagina by the use of instruments, injuries to those parts are less likely to occur. This impression is abundantly borne out by my own experience. Upon examining the records of St. Thomas's Hospital for the past five years I find that during that period there have been 22 unequivocal and uncomplicated cases of cellulitic abscess in the pelvis. Of these not a single one followed abortion. Twenty-one were the result of parturition ; and the twenty-second, the cause of which was not discovered, occurred in the fifth month of pregnancy.

Where do cellulitic abscesses in the pelvis usually point ? In the great majority of cases the spread of the inflammation is in a forward direction, from the base of the broad ligament, where it starts, to the connective tissue lying beneath the peritoneum which forms the floor of the anterior pelvic fossa, stripping up the peritoneum where it becomes reflected on to the anterior abdominal wall, and forming a broad strip of induration along and parallel with the upper border of Poupart's ligament. When suppuration occurs, the skin over the induration gradually becomes œdematous, and pointing usually occurs at a spot almost immediately above the centre of Poupart's ligament. Of the twenty-two cases of uncomplicated cellulitic abscess treated during the last five years in the women's ward at St. Thomas's Hospital, the abscess pointed above Poupart's ligament in 18, nine times on the right side and nine times on the left. The inflammation is often described as "following the course of the round ligament," but I know of no evidence to show that the round ligament plays any part in determining the course of the inflammation.

In exceptional cases the inflammation passes round to the loose tissue in front of the bladder, and the abscess points above the symphysis, or mounting up between the anterior parietal peritoneum and the sheath of the rectus, points at the umbilicus. In 3 of the 22 cases the abscess formed at the back instead of at the front of the pelvis, probably owing to implication of the hypogastric glands, and it was opened by making an incision above the anterior superior iliac spine and dissecting inwards, beneath the peritoneum to the pelvic brim. It is probably in cases of this kind that the suppuration occasionally extends upwards along the subperitoneal tissue of the iliac fossa and even into that of the loin, pointing either at the iliac crest or above it. The text-books speak of the pus in such cases following the course of the psoas muscle ; but when matter burrows along this muscle it is not from a cellulitic abscess but from dead bone. It is along the bloodvessels, and other parts such as the ureters, that actually lie in the connective tissue of the pelvis and are accompanied by a prolongation of it as they enter and leave the pelvis, that the pus finds its way. This is not only true of the cases in which suppuration extends to the iliac fossa and the loin, but also of those where the pus leaves the pelvis by the sciatic notch, or, passing beneath Poupart's ligament, points in Scarpa's triangle. In the former case it follows the course, not of the obturator tendon, but of the sciatic and gluteal vessels, and in the latter it is the femoral vessels, and not nerve or tendon, as is sometimes stated, that direct the course of the abscess.

It is commonly stated that cellulitic abscesses frequently burst into the rectum, the vagina, and the bladder. This statement appears to me to rest on very slender foundation. Many of the cases quoted in its support belong to an era when little was known of the pathology of pelvic inflammation, and on carefully reading them in the light of our present knowledge it is easy to see that at least a considerable number reported as cellulitic abscesses were really cases of intra-peritoneal suppuration originating in suppurative disease either of the tubes or ovaries. This is notably true in a case of my own, published twenty-two years ago, which, though I have now no doubt whatever as to its having been a case of intra-peritoneal suppuration from acute tubal disease, was described, in accordance with the crude gynæcological pathology of the time, under the heading of "pelvic cellulitis," and takes its place in Delbet's valuable monograph as a well-authenticated instance of the spontaneous opening of a cellulitic abscess into the rectum. At the same time it is only fair to say that there does not appear to be any anatomical reason why cellulitic abscesses should not occasionally discharge themselves into the rectum, the vagina, and the bladder, and that

some of the cases in Delbet's collection appear to be genuine examples of such an occurrence.

With regard to the 21 cases in which cellulitic abscess followed parturition, the period that elapsed between delivery and the pointing or opening of the abscess was usually between seven and twelve weeks. The earliest period at which pointing occurred was five weeks, the latest fourteen.

Passing now to other forms of pelvic suppuration, it is desirable in the first instance to obtain some idea of their relative frequency. With that object I have tabulated 83 cases in which I have performed abdominal section and found suppurative disease within the pelvis. The number is not large, but it is sufficient to give some indication of the main sources of intra-pelvic suppuration and of their relative frequency.

From these cases it is abundantly clear that purulent salpingitis is much the more frequent source of intra-pelvic suppuration. It was met with in upwards of 60 per cent. of the cases. In 44½ per cent. no other suppurative disease existed, and in the remaining 15½ per cent., although associated with suppurating cyst of the ovary, there was strong evidence of the suppurative change in the ovary being secondary to the purulent inflammation of the tube. Having so recently spoken of the pathological importance of the Fallopian tubes in connection with the pelvic peritonitis, I need not on this occasion further insist upon it. I may, however, point out that the reason why there is no separate mention of cases in which encysted intra-peritoneal collections of pus were found is that such collections are almost invariably a mere complication of purulent salpingitis. We are in the habit of thinking of suppurating Fallopian tubes as closed sacs of pus, the pus being pent up in the tube by occlusion of the abdominal ostium ; but it must be remembered that in the earlier stages of purulent salpingitis the fimbriated ends are open and the pus is free to discharge itself into the peritoneal cavity.

With the exception of purulent salpingitis the most common form of pelvic suppuration is suppurating cyst of the ovary. The frequency with which acute pelvic peritonitis is due to the presence of small suppurating ovarian cysts which, owing to their size, had not previously been known to exist is, I believe, not generally recognised ; at any rate, it has been quite in the nature of a revelation to me as case after case has occurred in the course of my own work. When peritonitis occurs in a patient with an ovarian cyst large enough to attract attention as a distinct abdominal swelling it is easy enough to recognise that it is due to inflammation of the cyst, but when such an occurrence takes place in a patient not known to have ovarian disease the source of the inflammation is almost certain to remain unsuspected, and the swelling subsequently observed is almost equally certain to

be regarded as purely inflammatory and unconnected with pre-existing disease. These cases are invariably sent into the hospital as cases of acute pelvic cellulitis. I feel sure that even when the abdomen has been opened and the suppuration discovered the true nature of the case has not always been made out. Many instances in which a collection of pus has been opened and the cavity drained, and in which the operator has been unable to satisfy himself as to the precise seat of the suppuration, have, I have but little doubt, been cases of suppurating ovarian cyst. The matting together of adjacent parts is of itself sufficient to introduce an element of confusion and to render recognition difficult ; but there is one condition that contributes to increase this difficulty more than any other, and that is the tendency of an ovarian cyst, when it becomes inflamed while still small enough to lie in the pelvis, to contract adhesions to the broad ligament, and in the course of its enlargement to draw the stretched and thickened broad ligament over it, until its anterior surface is completely concealed by it as by a hood. Until an operator becomes familiar with this phenomenon the condition that presents itself to his eye and touch is exceedingly puzzling and misleading. What often happens is that deep-seated fluctuation being detected a trocar is passed through the broad ligament into the suppurating cyst behind it, and the cyst is emptied and drained under the impression that it is a collection of pus either in the broad ligament or behind the parietal peritoneum. Operators who have had frequent occasion to open the abdomen in cases of obscure pelvic suppuration will, I feel sure, recognise the truth of this description. The proper treatment of such cases is, not to tap the cyst, but having obtained access to it by the careful and patient separation of adhesions, to enucleate it if possible entire, until there remain only the normal attachments, which can then be treated as a pedicle, and the whole cyst removed.

With regard to the cause of the suppuration in these cysts the evidence is strongly in favour of the view that in the great majority of cases the suppurative change in the ovary is secondary to purulent salpingitis. Of the 30 cases in which suppurating ovarian cysts were discovered active purulent salpingitis was found in 13 and chronic salpingitis in 12.

In the latter the conditions of the parts around showed that the tubal inflammation, though now chronic and comparatively quiescent, had originally been acute and severe. The fire had here, as it were, died out, though in the neighbouring structures, to which the flames had extended, it was still raging. Thus 83 per cent. of the cases of suppurating ovarian cyst were associated with salpingitis. If it be asked, Why may not the tubal disease be secondary and the ovarian primary? I reply that if that had

been the case one would have expected the mucous lining of the tube to be the last part affected and the least; in other words, one would have expected evidence that the inflammation of the tube had passed from the peritoneal coat inwards rather than from the mucous coat outwards. In 8 instances the suppurating tube and the suppurating ovarian cyst were, at the time of operation, in direct communication owing to ulceration of the cyst wall and perforation into the adherent tube. Whether the cystic degeneration in the ovary ever itself begins as an indirect result of inflammatory changes involving the outer coat of the ovary I cannot say; but certainly in the majority of cases it is much more likely that there already existed a small cyst, the contents of which became infected from the adjacent tube and underwent suppuration, and that under these circumstances the cyst grew so rapidly as to be easily mistaken for a large abscess in process of formation. Of the five remaining cases of suppurating ovarian cyst, in one the cyst had evidently become infected from a diseased vermiform appendix; whilst in the remaining four the source of the suppuration was not discovered. It is of course possible that in these the cysts became infected from their propinquity to the rectum.—*The Lancet, November* 4, 1893, *p.* 1103.

82.—ON THE PREVENTIVE TREATMENT OF PUERPERAL FEVER.

By Lovell Drage, M.A., M.D.

From a consideration of the bacteriology of this subject it appears certain that there is no specific bacterium which causes the sepsis, and that in view of the modification in structure and in function which bacteria undoubtedly undergo through variations in their surroundings and in the presence of other members of their own species it appears more reasonable to pay attention to the possibility of the mother affording a nidus for their growth than to the bacteria themselves. These exist everywhere, and, do what we may with antiseptics, it appears to me idle to suppose that we can do any more than take the greatest precautions of which we have knowledge against their introduction into the generative passages. This can be done by avoiding repeated examinations during the progress of labour, and by strict attention to cleanliness of the hands and instruments, and of the patient generally, both during and after delivery. It is quite easy to understand that if any of the pyogenic cocci are introduced into the mother at the time of delivery sepsis will almost certainly result, but, short of this, it

is probable that the bacteria which are introduced during the progress of labour, along with the air or otherwise, are unlikely to grow unless a nidus for their growth is ready for them. I have said nothing about douching with antiseptics after delivery. Now I place very great stress upon this, but I do so not on account of their germicidal powers, but because the douche removes at once placental or membranous débris and blood-clot, and generally cleanses the passages. Moreover, if a strong antiseptic like corrosive sublimate (1 in 2000) is used, great care must be taken in squeezing out the uterus, clots being thus driven out, and firm contraction is generally obtained. Douching during the lying-in is, I believe, an advantage, but it is not of so much importance as it is when used immediately after delivery, and should never be allowed in the absence of a skilled and trustworthy nurse. I have very keen recollection of a case of fever which occurred early in my practice. The nurse asked me whether I liked the douche administered, and I told her, "Yes, one of Condy lotion every day." About the fifth day a rise of temperature made me inquire into everything connected with the case. Finally the syringe was produced; it was old enough and dirty enough to have poisoned a town. The douching was discontinued, immediate abatement of the fever following, and from that time to this I have never allowed a patient to be douched by a nurse until I have inspected the apparatus and examined the nurse orally as to her knowledge. In case the douche is administered daily during the lying-in, either Condy lotion or one teaspoonful of tincture of iodine in one pint of water should be used. I do not think it either necessary or desirable to use the sublimate douche except immediately after delivery, unless there are special reasons.

The next point to pay attention to is the proper emptying of the uterus. In case of reasonable suspicion existing that a piece of placenta is left behind, an examination of the uterine cavity should be made, and, if the suspicion is well founded, steps should be taken to remove what remains, great care being taken to avoid unnecessary injury. I said reasonable suspicion, as I do not think that the uterine cavity should be explored as a matter of routine. Portions of membrane are not infrequently left behind, and in these cases care should always be taken to remove every portion which can be felt digitally hanging from the os uteri; but I do not think it desirable to hunt about in the uterus for a mere shred of membrane. Such shreds are usually expelled in the lochia, and cases are rare in which a small shred, such as I described in the case quoted above, gives rise to untoward symptoms. A great deal of trouble will be averted, I have found, by an avoidance of interference with the third stage of labour. I have long since given up the routine

practice of giving ergot after delivery and forcing the placenta by active compression of the uterus. All I do now is to await a pain and gently press the uterus with my hand. Then I wait for another pain and do the same, and so on until the uterus, with very little assistance from me, expels the placenta. I have found very much less difficulty with placenta and membranes since I have adopted this practice. I am not, of course, referring to cases where abnormal conditions, such as excessive hemorrhage, present themselves.

The management of the second stage of labour is also of importance, and very great importance ; but to deal with this is outside the limits of this dissertation, and I must merely state that when interference with the natural course of labour at this stage is necessary this interference can only be carried out with safety when a correct diagnosis of the cause for its necessity is made and when the necessary steps of the interference are carried out with a knowledge based upon an acquaintance with sound principles. It is my own experience and that of many others that it is not the cases in which artificial interference with the course of labour occurs where puerperal fevers most frequently appear during the puerperal period, but I have no doubt that artificial interference is very frequently the cause of puerperal fevers. Why is this? It is because wounds of the maternal passages can be so easily caused when artificial interference is resorted to. Lacerations of the perineum are of everyday occurrence, whether instrumental aid is resorted to or not, and in view of what has been said of the pathology of puerperal fevers it follows that it is of the utmost importance that they should be at once closed. In closing perineal wounds silkworm gut will be found to be the most satisfactory suture, and any large curved needle will be found sufficient ; it must, however, be borne in mind that it is necessary in any important laceration to pass the needle right round the tear, so that it never pierces the wound itself. A smaller point to be observed is that the sutures should not be tied tightly. The methods of closing a perineal laceration which extends into the rectum I do not propose to discuss. I have never seen one in my own practice, but such lacerations occur under some circumstances in any hands ; it is sufficient to say that they should be closed. Attention should be paid to the lying-in room ; it should be airy and have no more furniture in it than is absolutely necessary. The nurse should be thoroughly trained in habits of cleanliness and the use of antiseptics ; she should not be allowed to nurse if she has any open sore or suppurating wound or if she has ozæna or necrosis of bone.

It will readily be understood from what has gone before that the first point is to ascertain the cause of the fever and to

remove it if possible. I have fully explained the principles of treatment which I advocate in cases where the cause is not removable, as in the case of the softening of a thrombus. One general point on which stress must be laid is this—namely, the necessity of free evacuation of the bowels in the very first stage. Many of the older authorities laid very great stress on the importance of this, and nature will not infrequently try to relieve herself in this way without artificial aid. Calomel is the drug which I prefer, and, failing this, where the condition of the patient is suitable, the compound jalap powder in one-drachm doses will be found of use. So much, however, depends on the condition of the patient that no general rules about drugs can be laid down. As to the value of free evacuation I have no doubt. After this the value of iron in full doses should be recognised, and it is to be recollected that quinine is exhibited with best advantage in one full dose during the interval of fever where such exists. The value of fresh air and sunlight cannot be overestimated, and it is satisfactory to find that theory and practice are at one on this point.—*The Lancet, March* 3, 1894, *p.* 526.

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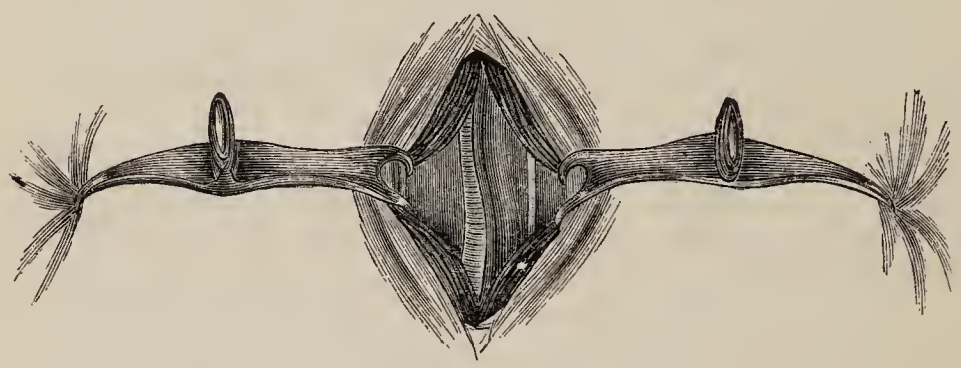

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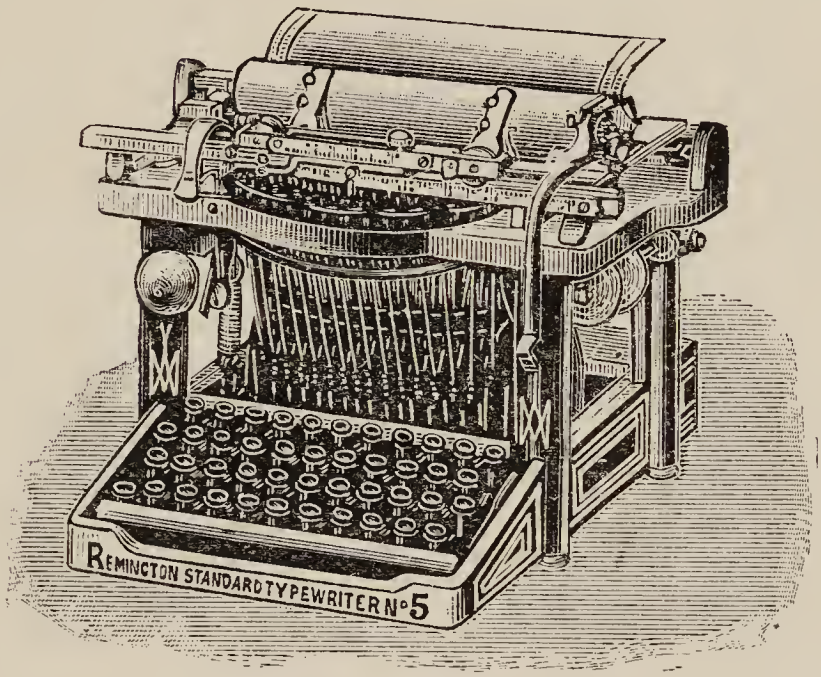

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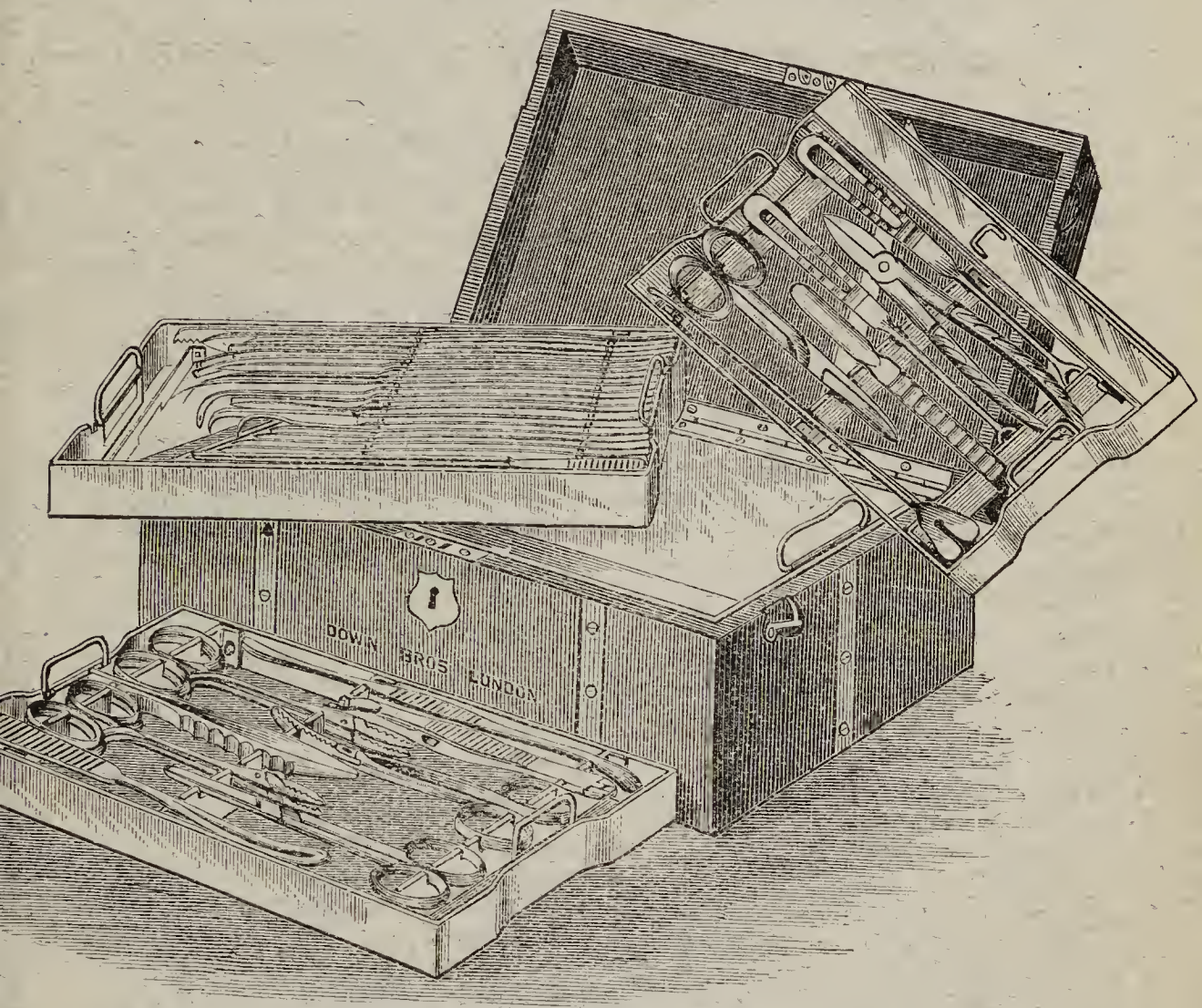

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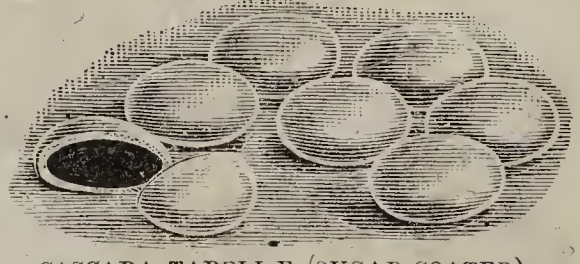

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